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VETERINARY MEDICINE

October 1934

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VOL. XXIX
No. 10

75 E. Wacker Drive,
Chicago, U. S. A.

Junior FORT DODGE
BIO-CHEMIC REVIEW

OCTOBER 1934

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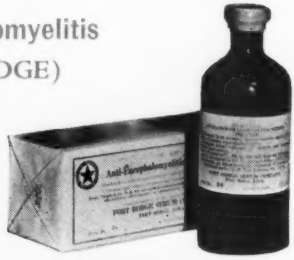

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Veterinary Medicine

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor
H. J. Mostyn, R.K.O. Bldg., New York, Eastern Representative

XII International Veterinary Congress

The Twelfth International Veterinary Congress held in New York City, August 13-18, 1934, cannot be classed as other than highly successful—a matter gratifying to the Organizing Committee and to the whole of the veterinary profession of the United States.

In membership, this Congress surpassed by approximately 100% any previous Congress, there being more than 3,100 veterinary members and nearly 700 extraordinary, lady and student members enrolled. The Organizing Committee had early set a goal of 3000 veterinary members and a total attendance of 2000; the membership goal was exceeded but the attendance was somewhat disappointing in that but 1259 men and 523 women, a total of 1782, were registered at the meeting. The failure of the attendance to reach a higher mark is attributable mainly to the trying economic conditions and particularly to the unprecedented drouth in the middle west, which contains a large part of the veterinary population of the country, and further to the Congress being held on the Atlantic Coast and thus entailing for attendance a considerable journey for a majority of the veterinarians in the country.

The program could have been no disappointment to anyone. Altogether more than 80 papers were presented in full or by title and summaries of all were distributed to those in attendance before the Congress opened. These papers and the discussions will be published in full in the report of the congress which it is expected will be ready for distribution about the first of January next. Brief reviews of the papers will be found in pages that follow.

The Congress was officially opened by M. L. Wilson, Assistant Secretary of the U. S. Department of Agriculture, who delivered a very appropriate and encouraging address. Dr. John R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture, was elected president of the Congress and on the recommendation of the Organizing Committee, a list of office bearers including a president, two vice presidents and a secretary for each section were elected. President Mohler then called upon the head of each of the delegations from foreign governments for remarks. All responded briefly in one of the four official languages of the Congress. The opening ses-

sion was a most interesting—a thrilling affair.

Entertainment Features Lavish

Naturally, much interest centered in social affairs in connection with the Congress, in the reception by the Organizing Committee, which was attended by nearly every one at the Congress, the State banquet which was attended by 240, the Congress banquet attended by 873 and in the entertainment provided for the ladies which was more than ample in amount and well selected. The Honorable P. T. Culbertson, Assistant Secretary of State, officiated as toastmaster at the State banquet. The banquet was opened by a toast proposed by Doctor Mohler to "The President of the United States." The speakers were: Dr. P. J. L. Kelland, Great Britain; Prof. Jean Verge, France; Dr. F. Mussemeier, Germany; Dr. Carlo Bisanti, Italy, and Dr. F. Rosenbusch, Argentina. The toastmaster at the Congress banquet was Cassius Way, New York. The speakers were: Prof. Dr. Robert v. Ostertag, Germany; Dr. P. J. DuToit, South Africa; Prof. P. Rubay, Belgium; Dr. A. E. Cameron, Dominion of Canada, and Dr. C. P. Fitch, President of the American Veterinary Medical Association. Drs. L. A. Merillat and

Banquet, XII International Veterinary Congress —Wald

Adolph Eichhorn were the interpreters for both banquets.

Splendid arrangements were provided for the comfort and convenience of those attending the Congress. The hotel accommodations at the Waldorf-Astoria were excellent, ample facilities being afforded for everything necessary in general meetings, section meetings, committee meetings and gatherings of all sorts, with living and restaurant accommodations above criticism. In the matter of information service alone can the arrangements for the Congress be said to have fallen down, and in this the history of every International Veterinary Congress since the attendance became large was probably repeated. A poor information service, however, is not an inseparable concomitant of a gathering of many nationalities. A good service entails no insurmountable difficulties. We should have done better in this respect by taking thought and profiting from experience at the XI Congress.

The Congress Goes on the Air

An innovation at this Congress was a radio broadcast of a specially prepared program on the second and fourth days of the meeting. This broadcast through the courtesy of the U. S. Department of

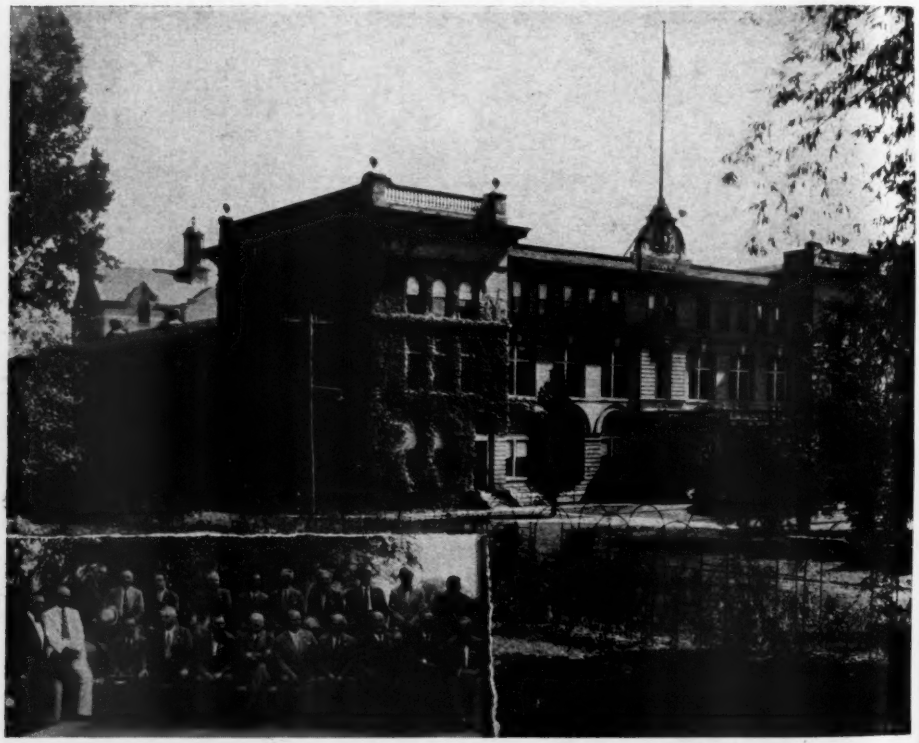
—Waldorf Astoria Hotel, New York, Aug. 16, 1934.

Agriculture was carried by the NBC on the farm and home program of the department. This program has an audience known to vary between 10,000,000 and 15,000,000 listeners. The program was designed to give the general public and particularly the farm population, specific information about the veterinary profession of this and other countries and the services rendered by the profession to all the people. In addition to the 60 stations broadcasting this program on regular wave lengths to every part of the United States, the broadcast was carried by three short wave stations, probably enabling it to be picked up in any part of Europe and in most of the remainder of the world. By this radio program, publicity for the profession was achieved in an amount that, of course, has never been approached heretofore.

The metropolitan daily newspapers treated the Congress liberally in the matter of mention in their columns, the *Times* carrying a daily story and all the other New York dailies giving it one to several stories. Among all these only one was of an objectionable tenor and that was published before the opening of the Congress. Surely no other veterinary meeting in this country has been treated so liberally or so kindly by the press.

Walker-Gordon—Rockefeller

Friday afternoon, seventeen bus loads and many private carloads of those attending the Congress made a trip to the Walker-Gordon Farm at Plainsboro, N. J.,



Administration Building, New York State Veterinary College, Cornell University. The insert shows a group of delegates to the XII International Veterinary Congress, a part of those who visited the institution Sunday, Aug. 19, 1934.

and to the Department of Animal and Plant Pathology of the Rockefeller Institute at Princeton, N. J.

The trip was a delightful one, except for the fact that the buses were old and decrepit and a number of them broke down on the way, and the atmosphere at Rockefeller's was a bit chilly. The warmth of the reception by Mr. Jeffers, president of the Walker-Gordon Company, and his staff, however, made up for any lack of cordiality elsewhere.

The delegates, of course, were greatly interested in the elaborate equipment for the production of certified milk at the Walker-Gordon Farm; naturally, most of all in the "Rotolactor" and in the apparatus for artificially drying hay.

The First International Clinic

An extremely attractive feature of the Congress was the post-congress clinic, that alone was responsible for the attendance of many and the instruction of an even larger number. It will be described in more detail in pages that follow. This clinic was an innovation, no previous International Veterinary Congress having held one.

Reception at Camp Smith

Saturday afternoon a reception was tendered the visiting veterinary officers of foreign armies by Colonel Salisbury, M. C., and officers of the 102nd Medical Regiment (N. Y., N. G.) at Camp Smith near Peekskill, New York. The reception was attended by all veterinary officers of the U. S. Army still in New York. Unfortunately, a number of our veterinary officers who had attended the Congress, including Colonel Foster, Chief of the Service, had perforce returned to duty or were enroute to their stations before the reception was held.

A Day at the N. Y. Veterinary College

Sunday following the close of the Congress, some 200 of those in attendance journeyed to Ithaca, where they were entertained throughout the day by Dean Hagan and all members of the faculty of the New York State Veterinary College, being furnished breakfast, lunch and tea on the campus and guides to show and explain every part of the college. The day closed with a drive among the beautiful hills and lakes surrounding Ithaca. No more delightful day could have been planned. A question frequently propounded by the visitors was: "Why wasn't the Congress held here, where there are ample halls for all meetings and ample lodging in the dormitories for twice the number that attended the Congress?" Well, an invitation to hold the Congress at the New York State Veterinary College was extended to the Organizing Committee.

A Tour to Chicago

Following the day spent at Ithaca, 97 of the visitors, including 14 nationalities, proceeded to Niagara Falls, then to Detroit, where they visited the Ford plant, and on to Chicago, where three days and nights were spent in visiting the stockyards and packing houses, the World's Fair and points of interest about Chicago. Returning, the major part of the party went via Washington, where two days were spent in sight-seeing and a day at the University of Pennsylvania, thence to New York for embarkation. The British visitors went from Chicago to Guelph for visit at the Ontario Veterinary College, thence to Montreal and on to Boston, where they embarked for Liverpool.

At Chicago, the whole party was entertained by the export packers, who gave them a banquet at the Blackstone Hotel. At this banquet Chas. E. Herrick of the American Institute of Meat Packers presided. The speakers were: Mr. Herrick, Dr. John R. Mohler, Prof. Dr. Robert v. Ostertag, Germany, Prof. Jean Verge, France, and Prof. Geo. H. Wooldridge, England. Arrangements for the entertainment were handled by Mr. J. J. Ferguson of Swift and Company.

The XIII Congress

It was voted by the Congress to hold the next convention in Switzerland in 1938, at Berne or Zurich, as the Permanent Committee may decide.

Chicago Tour, International Veterinary Congress.

1—Col. K. Millak, Poland; 2—Prof. J. Basil Buxton, and 3—G. H. Locke, M.R.C.V.S., England; 4—Dr. John R. Mohler, Washington, D.C.; 5 & 6—Mme. and Dr. Paul Chanvalon, France; 7—Dr. F. Volkmar, Columbus, O.; 8—Dr. C. Chr. Brüggemann, Germany; 9— Dr. F. Gerlach, Austria; 10—Prof. F. Král, Czechoslovakia; 11—Prof. Geo. H. Wooldridge, England; 12—Prof. G. E. Hermsdorff, and 13—Mr. Jose J. de Pecego, Brazil; 14—Prof. P. Rubay, Belgium; 15—Mr. E. Haux, Chicago, Ill.; 16 & 17—Mrs. and Capt. Leonard S. Balls, England; 18—Prof. V. Stang, Germany; 19—Dr. T. P. White, Washington, D. C.; 20—Dr. A. E. Behnke, Milwaukee, Wis.; 21—Dr. A. Pomner, Austria; 22—Mr. Jose J. de Pecego, Brazil;

(*Concluded at bottom of next page*)

Address of Welcome By The Hon. M. L. Wilson,

Assistant Secretary, U. S. Department of Agriculture

IN scientific fellowship and a high spirit of international altruism, you have come to this side of the world for the first time in the 71 years of your periodical deliberations, gathering from the far ends of the earth.

As never before, the people of this land are veterinary conscious, and in these words of sincere greeting is voiced, I am sure, a national sense of interest and gratitude that you have assembled among us for discussions by your world leaders on the relationship of veterinary science to agriculture, public health, human happiness and our national industrial well-being.

This is the realistic age of science. This is the golden dawn of the highly specialized fact-hunter and fact-finder. In the civilization which your various member-nations represent, the pure scientist occupies a fundamentally definite leadership. In every final analysis, both public and private enterprise inevitably turns to his experimental procedures for the basis of practical accomplishment.

In the practical application of veterinary science to human affairs, your contribution is, perhaps, without any parallel.

Based on the interchange of your scientific discussions, your member-nations have been able to set up various treaties and covenants in matters of imports and exports of animals and animal products, quarantine and sanitation which are models in international relations.

By reason of this international veterinary intelligence system, the private veterinary practitioner, in his usefulness in our homes and on our ranges and farms, has advanced to standards of efficiency in many amazing ways ahead of "human doctoring." The public veterinary practitioner, local, state and national, has become a vital force in public affairs.

In less than a century your infant science has set precedents, particularly in selective processes of animal breeding. Backed by your epochal researches, all phases of animal husbandry have taken forward-going strides which social engineering in a human sense of planning might well and instructively scrutinize.

This International Veterinary Congress supplies the groundwork for nation-wide, indeed world-wide, campaigns in animal disease eradication, prevention and control. One result has been to elevate the standards of veterinary education in our colleges and universities, and to create a flow of scientific veterinary information of the most up-to-date nature to the farthermost nooks and corners of all lands.

And so the scientifically trained veterinarian today stands a many-sided warrior for the common good He is the guardian of animal health. He becomes a defender of human health in his battle against those animal diseases communicable to man. He has his vigilant scientific eye on sanitation. In matters of animal breeding he becomes an economist. In his supervision of the affairs of livestock he becomes an administrator. His inspection of meat alone enables millions of human beings to continue their existence in increasing safety and human endeavor to reach a higher efficiency.

THE economic consequences of his service to individuals and the state, to industry and agriculture, are incalculable. A single case can be illuminating.

23—Dr. A. Richart, France; 24—Dr. D. Finamor, Brazil; 25 & 26—Prof. and Mrs. G. Nichita, Roumania; 27—One of the buses from which the visitors were shown points of interest about Chicago; (man wearing white hat is Dr. Quinlon, Union of S. Africa); 28—Dr. A. Vosshage, and 29—Dr. Karl Ehlers, Germany; 30—Dr. Lionel B. Bull, Australia; 31—Capt. James Anderson, Scotland; 32—Dr. Gh. Manolesco, 33—Prof. G. K. Constantinesco, 34—Dr. I. Radulovici, and 35—Dr. F. Begnesco, Roumania; 36—Prof. C. Bisanti, Italy; 37—Prof. J. Nörr, 38—Dr. H. Grimm, 39—Prof. R. Götze, 40—Dr. F. Pante, 41—Dr. A. Vosshage, and 42—Dr. Wolf Krause, Germany; 43—Prof. J. Verge, France; 44—Mr. A. Baumgarten, 45—Dr. Friedrich Weber, 46—Prof. W. Zwick, and 47—Dr. O. Schreiber, Germany.

Due to scientific veterinary procedures, the gradual decline in hog cholera during the past 20 years has saved the American swine industry more than 400 million dollars. Due to organized veerinary procedures, through our federal veterinary force, supported by your scientific findings, many of the major livestock maladies of the world have not gained entrance to this country. Of those few which have crossed our border, prompt and drastic measures have stamped them out or else they are being rapidly eradicated or effectively controlled. Contagious abortion, the most serious of these maladies at the present time with us, is about to receive a death blow. The department which I have the honor to represent has recently set aside a fund of $17,000,000 to campaign against it—backed by the latest scientific researches of this Congress.

Speaking to you as a public official, I feel I should not neglect to cite a typical instance of veterinary scientific and administrative procedure in federal regulation and control which bears directly on our own national industrial recovery and expansion.

Entrance to School of Veterinary Medicine, University of Pennsylvania. An inspection of this institution was included in the Post Congress Tour of delegates to the XII International Veterinary Congress.

For several hundred years a mysterious cattle disease was prevalent in our southlands, and as late as fifty years ago it virtually devastated the cattle industry in 15 southern states, at a cost of no less than $40,000,000 annually to the southern livestock industry.

It had gone unconquered for the reason that this diabolical disease-racketeer, with arch-criminal cunning, defied detention.

Veterinary science in this country was undeveloped. There was not as yet a U. S. Bureau of Animal Industry.

Contagious pleuro-pneumonia was raging simultaneously among northern cattle, and had been since 1843, almost annihilating our trade in cattle and cattle products abroad through embargoes other countries were in self-defense obliged to raise against our shipments.

WITH the enactment of Federal laws, establishing the Bureau of Animal Industry, Department of Agriculture, May 29, 1884, primarily to give battle to pleuro-pneumonia, a little group of scientific men at Washington went in real earnest on the trail of the unknown foe of our southern cattle empire.

This became one of the most dramatic and adventurous fact-finding expeditions of veterinary science, into hitherto untouched realms of research, to the immortal glory of Salmon, Smith, Kilborne and others.

Here was a job which only the scientist could tackle. To him only was known the tactics of foes of animal land which move in mass attack in terms of disease units.

In time they incriminated definitely the so-called cattle fever tick. They also established irrefutably and for the first time that an infectious disease could be transmitted by an intermediate host or carrier from one animal to another.

This discovery altered the course of human history. It changed the course of empire. It made possible one of the outstanding engineering achievements of all

time. It expanded international commerce as no one other instrumentality.

By leading to the mosquito as the intermediate host of malaria and also yellow fever, it became the cornerstone of the sanitary accomplishments which conquered these destructive diseases on the Isthmus of Panama and resulted in the building of the Panama Canal.

And now, through scientific study into the habits and characteristics of the cattle fever tick, the U. S. Bureau of Animal Industry made further discoveries, among these being the period of the year, the month in the year, almost the very day of the month, when this tick was ready to strike.

NOW began the greatest single piece of regional reconstruction ever undertaken by any nation on the face of the globe.

To remove this economic blight from a natural pastoral paradise, and revive natural impulses of economic redemption from within, our Federal and State army of veterinary warriors have gone forth in those fifteen southern states in unrelenting battle, reinforced by their own educational campaigns among cattle people and agriculturists generally throughout the whole territory of infestation.

By scientific and administrative methods, they have turned a region of despair into an empire of hope and opportunity.

The battle line has shrunken to portions of three states. More than 800,000 square miles of a disease pest-hole have been turned into a vast, healthy grazing ground, released from quarantine via the dipping vat. Today, due to veterinary service, to long-time planning, for science never sees the end, a new southern cattle industry is rising out of sectional despondence, with 171 bull associations, 327 creameries and 37 cheese factories where none dared or could exist before this monumental achievement in disease eradication.

AND not only that.

Today a savage sun is withering, drying up and baking great stretches of western range regions into an infertile, gargantuan tennis court. This has called for large-scale drought relief. A vast if scattered mileage of land formerly the support of ranchmen has, for the time being, become almost uninhabitable and an economic burden on the owners.

With 20% more cattle than a normal year's supply, with 40% less than the normal pasturage, and half or less the normal water need, the Federal government has undertaken original measures of cattle redistribution, both humane and economic, never before attempted, made possible only because of the effective preliminary pioneering work of the veterinary forces in cattle tick eradication.

Into a perennially well watered southern pasturage, with abundance of year-around natural and nutritious grasses, into state after state where our scientific gunners and axemen have cleared the ground, drove after drove, carload after carload, train after train, of fine beef and dairy types of menaced western livestock are now being diverted.

And so the salvation of a drought-stricken cattle industry in one section of the country is brought about by the timely rejuvenation of a disease-eradicated cattle industry in another section.

INDEED, this redistribution need not be restricted to cattle. There in those southern states is a bourne for the economically distressed people of the drought-ridden western lands.

Veterinary science, indeed, has become a mighty economic and social balancer in national affairs. And in a day when all lands are engaged in the solution of new and intricately complicated problems of human salvation, into which enter questions of human as well as animal distribution, the proceedings of this 12th session of the International Veterinary Congress will be of nation-making import.

More and more the world recognizes the need of the Daniel Boones of science, to point a brighter, a cheerier, and a safer guiding way on the onward human path.

Chicago Tour, International Veterinary Congress.

48—Dr. O. Schreiber, 49 & 50—Dr. and Mrs. R. Linder, and 51—Prof. J. Nörr, Germany; 52—Prof. J. Lenfeld, 53—Dr. F. Pfaff, and 54—Prof. F. Král, Czechslovakia; 55—Dr. G. Katzke, and 56—Dr. W. Mattes, Germany; 57—Prof. G. K. Constantinesco, Roumania; 58—Prof. B. S. Parkin, South Africa; 59—Prof. J. Russell Greig, Scotland; 60—C. V. Watkins, M.R.C.V.S., England; 61—Dr. John R. Mohler, Washington, D. C.; 62—Dr. H. Grimm, 63—Dr. H. Zeller, and 64—Prof. R. Götze, Germany; 65—A group of Congress visitors on the steps of the Elks Memorial, Chicago. Drs. John R. Mohler and G. K. Constantinesco will be recognized in the fore-center. 66—A group of Congress visitors in front of the Fountain

(Concluded at bottom of next page)

Veterinary Help in Man's Problems*

Veterinary science and medical science overlap in several important fields. In others medicine has advanced on the basis of discoveries made by veterinarians. The two professions cooperate in protecting public health. Veterinary supervision of animals at the time of slaughter is the basis for the branch of the pharmaceutical industry which utilizes glands and other parts of animals in providing treatments for human ailments.

In studying and encouraging the breeding of better domestic animals the veterinarians have benefited farmers and consumers, and have also benefited themselves. On the average, purebred animals have a utility value at least a third greater than ordinary livestock, and this margin of value encourages the employment of scientific aid in case of disease. Economically, farmers are benefited greatly by the cooperation of veterinarians and food and drug officials in keeping off the market quantities of worthless nostrums advertised to cure the ills of livestock and poultry.

The relationships between medical and veterinary science is especially illustrated in the field of treatment for maladies that affect the health of both human beings and the lower animals, such for example as anthrax, rabies, tuberculosis, milk sickness and parasitic infestations. There are others less common in which the form of the human disease closely resembles that of a corresponding animal malady though the exact relationship may not yet be fully understood, and in which the two professions have joint interest.

As examples of the way in which veterinary science has sometimes led the way to advances in medical science may be cited veterinary research into tick fever which established the fact that insects may carry diseases. This discovery was the basis for controlling malaria, yellow fever, typhus, bubonic plague and many other human diseases carried by insects.

A scientist working with the casual agent of infectious abortion of cattle discovered that it was intimately related to the organism causing undulant fever of man. The close relationship of veterinary research to public health research was emphasized by the transfer of the work and of the scientist doing the work to the Public Health Service.

Meat inspection is an achievement of veterinary science, which protects public health and is regarded virtually as a public utility. In protecting the milk supply the medical profession exercises sanitary control of the fluid, but the veterinarians test for tuberculosis and other infections.

Veterinary supervision of animals at time of slaughter, which is a part of the meat inspection service, is also the basis for a branch of the pharmaceutical industry which uses glands and other parts of slaughtered animals to prepare treatments for many human ailments. Similarly manufacturers of antitoxins, serums, bacterins and other biological products utilize methods, many of which originated in veterinary science.

Quality in livestock is of profound veterinary interest since animals that are valuable for breeding and utility purposes justify veterinary service more often than inferior types. Stockmen interested in livestock improvement usually seek the latest facts concerning means of maintaining animals, including poultry, on a high plane of health and efficiency.

*Abstracted from an address, Relationship of Veterinary Science to Animal Breeding and Public Health; Legal Protection of the Practice of Veterinary Medicine by Dr. John R. Mohler at the XII International Veterinary Congress, New York, Aug. 13-18, 1934.

of Time, Washington Park, Chicago. Mr. C. V. Watkins and Dr. Gh. Manolesco will be recognized at the extreme right. The lady in black is Mrs. J. B. Quinlan, Union of South Africa. 67—Dr. I. Radulovici, Roumania; 68—Prof. H. Holth, Norway; 69—Prof. S. Shermer, and 70—Dr. H. Hohmann, Germany; 71—Dr. A. Rivera, Puerto Rico; 72—Prof. G. Finzi, Italy; 73—Capt. G. F. Banham, England; 74—Dr. F. Menendez, Puerto Rico; 75—Lt. Col. Graham B. C. Reese-Mogg, England; 76—Prof. F. Müssemeier, Germany; 77—Prof. P. Perrucci, Italy; 78—Dr. Ismail A. B. Khalifa, Egypt; 79—Dr. F. Pante, Germany; 80—Dr. F. Begnesco, Roumania; 81—Prof. Oluf Bang, Denmark.

The public health element in veterinary science is responsible in part for many of the regulatory services which in the United States are assigned to the Bureau of Animal Industry for administration. These include international and interstate inspections including quarantines and supervision of transport of animals and animal products; meat and dairy inspections; hog cholera immunization at public markets; control and eradication of animal diseases, and cooperation with practitioner and in local efforts in disease control.

The service of veterinary science to public health suggests other possible applications of knowledge, obtained from livestock, for the betterment of mankind. Promising fields are those of race improvement, nutrition and allied biological studies.

Mr. Thomas E. Wilson (left) president Wilson and Company and Prof. Dr. Robert v. Ostertag, Ministerialdirektor, i. R. Germany, caught by the camera during the post International Veterinary Congress tour of the Chicago Packing Houses.

Legal protection to the practice of veterinary science is a recognized public necessity in both a national and international sense. All veterinarians in the public service are selected subject to civil service examinations. All the States now require licensing of veterinary practitioners, and most require that practitioners shall be graduates of approved veterinary schools. The standards established by Federal and State laws have helped materially to confine the practice of veterinary science to men worthy of public confidence.

Post Congress Clinic*

The clinic following the XII International Veterinary Congress was held in the College of Pharmacy amphitheater, Columbia University, permitting a good view of the demonstrations from every seat. To aid this, spot lights were installed to illuminate the operations brightly. Microphones were installed so that the operations could be described by the demonstrators in a natural tone and yet the whole audience could hear.

The clinic started at 9:30 A. M. and continued until 4:45 P. M. with three quarters of an hour off for lunch, which was served to the audience while remaining in their seats. The number in attendance varied from 450 to 500. The attention of the audience was very good considering they were seated more than seven hours. The large number of questions asked each demonstrator, manifested great interest. It was necessary for the chairman to restrict questions in order to complete the program.

The following operations were performed and demonstrations explained:

1. Epidural Anesthesia in Small Animals by Prof. E. J. Frick, Kansas State College, Manhattan. Doctor Frick demonstrated that epidural anesthesia is a very practical method of posterior anesthesia and explained the cases in which it is most applicable.

2. Enucleation of the Eye with Partic-

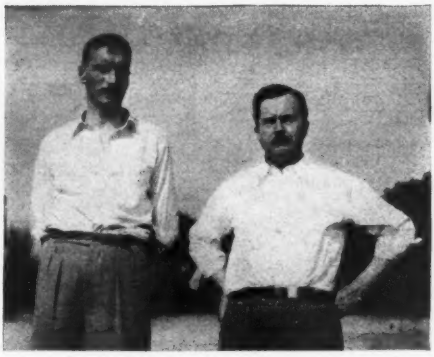
*Reported by Dr. C. P. Zepp, chairman, Post Congress Clinic Committee.

ular Reference to Suturing of Lids by Profs. H. C. Stephenson and H. J. Milks, New York Veterinary College, Cornell University. This demonstration was skilfully performed and explained by Doctor Stephenson. To facilitate the explanation, a typewritten explanation of the operation was distributed to the audience enabling it to follow every step of the operation.

3. A Pharmacological Demonstration on the Circulation by Prof. H. H. Dukes, Department of Veterinary Physiology, New York State Veterinary College, Cornell University, assisted by Dr. J. Sampson, Cornell University, was a treat to the veterinarians in attendance since they had graphically shown and explained to them the effects of a large number of drugs on the circulation. This demonstration required a large amount of preparation and equipment and was an exceptionally valuable contribution to the clinic program.

4. Reduction of Large Inguinal Hernia by Prof. W. M. Mitchell, Royal (Dick) Veterinary College, Edinburgh, Scotland. The audience appeared to be greatly interested in this demonstration since we were anxious to see how our colleagues from across the sea operate. There were many favorable comments from the audience. In the writer's opinion no operation on man or animals could have been more scientifically performed, nor with more nearly perfect aseptic and surgical technique. Doctor Mitchell has a great asset in combining wit with his thorough explanation which kept the audience in high spirits. His demonstration of asepsis and surgical technique gives the practicing veterinarian a goal for which to strive.

5. Scarff Method of Aseptic End to End Anastomosis of the Intestines by Prof. W. F. Guard, Ohio State University, Columbus, assisted by Dr. D. A. Eastman, Eastman Small Animal Clinics, Moline, Illinois. Doctor Guard's manner of performing and explaining this operation showed his complete knowledge of the subject. Particular care was observed that the audience might see all the steps in the operation. Following the operation, he further explained the suturing of the intestines by a blackboard diagram.



Finalists, International Veterinary Congress Golf Championship, Olympia Fields, Illinois.

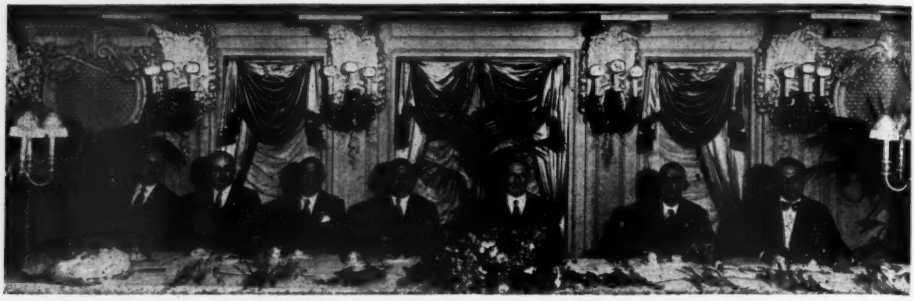
6. Cesarean Section in Small Animals by Prof. E. K. Sales, Michigan State College, showed many points which will be of great value to the practicing veterinarian.

7. Simplified Blood Examination by Dr. R. E. Nichols, Ohio State University, Columbus, Ohio. Doctor Nichols read a thorough paper on blood examination. This paper was very interesting to the veterinarians since it is a new field and one which is of great importance to them from a diagnostic standpoint.

8. Cecectomy by Dr. D. A. Eastman, Moline, Illinois, was explained and demonstrated from the practitioner's standpoint. The audience was much interested in Doctor Eastman's demonstration since it gave them an opportunity to compare a practitioner with college professors. In the writer's opinion, Doctor Eastman's methods and ability ranked with the best.

9. Setting Fractured Femur with Needles by Dr. A. K. Anderson, Los Angeles, California. Doctor Anderson demonstrated setting a fractured femur by drilling small strong needles trans-

versely into the ends of the fractured bone, then placing a splint over the ends of the needles, thus holding the ends in apposition. A very practical method.



Speaker's Table at the "Packers' Banquet." Left to right: Dr. John R. Mohler, Dr. R. Fred Eagle, Prof. Carlo Bisante (Italy), Prof. Dr. Robert v. Ostertag (Germany), Mr. Chas. E. Herrick, Prof. George H. Wooldridge (England) and Prof Jean Verge (France).

Women's Influence on Veterinary Science*

The gratifying attendance of ladies at the International Veterinary Congress suggests the desirability of brief remarks on women's influence on veterinary science. At various times veterinary publications have commented on the subject briefly and the official journal of the National Veterinary Medical Association of Great Britain and Ireland published this year a ladies' number. It dealt with the careers of outstanding women engaged in various branches of the veterinary profession.

In England there is a rapidly growing group of women veterinarians. At the present time few women in the United States have become veterinarians, and these have become veterinarians very recently, so there has been little opportunity for them to establish the record for distinguished service which may be expected in the future. Aside from women veterinarians, a number of women have made important contributions to veterinary science even though they do not have veterinary degrees.

In the field of veterinary parasitology, Dr. Georgina Sweet is known to all Australian veterinarians for her work, and she taught many of them in their veterinary course; Vera Irwin-Smith is another Australian woman who has contributed to our knowledge of parasitology. In England Dr. Marie Lebour has done much work on the parasites of fish, and Miss Ormerod did important work on ox warbles. The Countess von Linden and Marianna Plehn in Germany and Marcel Boppe in France have worked in veterinary parasitology. Gertrud Theiler in South Africa did excellent work on horse strongyles. Nina Kohl-Yakimov contributed to our knowledge of filarids and Protozoa in Russia. C. R. Bakker worked on ascaris in Holland. Annie Porter is a distinguished Canadian protozoologist.

In the United States Dr. Eloise Cram is a well known scientific figure, having monographed most of the bird nematodes, worked out the life histories of many poultry nematodes which use intermediate hosts in their life cycle, and being at present in charge of the work on poultry parasites in the Bureau of Animal Industry. Among her associates, Dr. Myrna Jones has worked out the life histories of many poultry tapeworms, Dr. Ena Allen has contributed to our knowledge of poultry coccidiosis, and Eugenia Cuvillier has done excellent work on a nematode worm causing serious losses among pigeons.

*Address by Dr. John R. Mohler, Chief, Bureau of Animal Industry, United States Department of Agriculture, rt a meeting of the ladies in attendance at the Twelfth International Veterinary Congress, New York City, August 14, 1934.

Dr. Mary Skinker, of the Bureau, has done extensive work on the tapeworms of dogs, cats and wild carnivores. Dr. Olive Swizy, in California, has worked on Protozoa, and Adele Hobmaier, of California, has done excellent work on lungworm life histories. Dr. Elizabeth Jones, of Harvard, has made important contributions to our knowledge of coccidiosis and epizootic tremor of poultry.

In the field of bacteriology, Dr. Alice Evans, of the United States Public Health Service, is an authority on the brucelloses. Ida Bengston, also of that service, has made outstanding contributions to our knowledge of botulism. Studying in the same and related fields, Hilda Hempel Heller, of California, has done important work in relation to anerobic organisms.

Though it is a pleasure and privilege to pay tribute to these outstanding women, my present remarks are addressed more particularly to those engaged in the more customary walks of life. In the home, at the market, in women's organizations, in schools, and even in sports, women have exerted a surprisingly broad influence on veterinary science and the betterment of the livestock industry. It is the women who largely purchase foods and prepare or direct their preparation in the home. For this reason women have been conspicuous in their sponsorship of meat and milk inspection and in sanitation surrounding the preparation and processing of these animal products. As home makers they recognize that proper safeguards protect the health and even the lives of their families.

In the eradication of bovine tuberculosis, for instance, the favorable attitude of women both in cities and rural districts has been a very material help in the rapid progress of this work in the United States. Judging from numerous incidents reported by the inspectors who have visited farms to make tuberculin tests, the influence of women in behalf of safe milk supplies lends colorful human interest to this great veterinary project.

As wives, mothers, and teachers, women likewise have been helpful in promulgating accurate knowledge and correcting distorted information concerning veterinary work. One much-discussed topic is that of animal experimentation. The veterinary profession invites the most searching study of this subject by women individually and by their organizations. We want women to know that the veterinary profession shares with them the desire and effort to alleviate animal suffering. We want them to know the practical measures developed by veterinarians to prevent and cure painful diseases. We invite women's understanding and appreciation of the extensive use of anesthetics by veterinarians. Intelligent and sympathetic women also readily perceive that the sacrifice of a few animals, in research, leads to multiple subsequent benefits to millions of animals in years to come.

Turning to the field of animal production we find many women who have been highly susccessful in the breeding and exhibiting of livestock. Women also have been active in the training of horses for racing, polo and similar sports. Others have engaged in the poultry industry and in raising dogs, cats, birds and related pet stock. All these vocations and avocations bespeak interest in topics with which veterinarians also deal.

In behalf of the International Veterinary Congress I therefore acknowledge the part that women have played in the development of veterinary science and animal production. And to the ladies who have favored us with their presence on this occasion, I pay a further tribute. Their interest in being here implies a sympathetic appreciation of veterinary work—an interest that so often inspires men to greater attainments. When the women of a household understand the purpose and value of the work in which their men are engaged, there is a congeniality and encouragement which stimulates achievement. Under such favorable home relations, men often develop hidden talents and go far beyond the goal they would have attained under less favorable circumstances.

Thus have women influenced veterinary science in the past. And through the same or similar interests, activities and sympathies they will continue to have a partnership in the work of our profession.

Veterinary Conditions in Belgium*

It is exactly one century ago that veterinary education was officially organized in Belgium. Since then empirical practices have been progressively fought for the benefit of agriculture.

Previously contagious diseases had raged continuously—glanders of horses, contagious pleuro-pneumonia of cattle; the anthrax affections, to mention only the most important ones, caused great losses to the people's wealth and health. Many people died annually from diseases contracted from animals. Thanks to an effective organization of our veterinary service, Belgium has been able to control these formidable diseases.

There are, however, other diseases, such as tuberculosis and undulant fever, which, owing to the density of our livestock population, have made important increases. It is to control these affections, which are dangerous for man through the use of meat and milk, that Belgium maintains a veterinary service to fight them by every means possible.

After the war various diseases of animals were imported to our country. These were rinderpest of cattle, dourine of horses and lymphadenitis of sheep. Quickly recognized, they were combatted by strict measures. Otherwise our entire livestock holdings would have been totally destroyed. Thus the rôle of the veterinary service made itself felt in the rehabilitation of our country after the war. Belgium possesses breeds of horses known over the whole world for their excellence.

As in other countries the field of action of veterinary medicine has been greatly augmented in recent years. By intervention in the control of human diseases of animal origin, the veterinarians have become important functionaries in public health work.

One of the special Belgian activities of veterinary medicine is the development of animal production in our Belgian Congo Colony in Africa, to the immense advantage to the native population. Our great interest in the progress of veterinary medicine is shown by the interest incited among us by the 12th International Veterinary Congress.

* * * *

Veterinary Conditions in Italy**

The Italian delegation to the 12th International Veterinary Congress is happy to greet the Veterinary profession and livestock owners of the United States. In the short time that we have been here, we have had occasion to appreciate the importance of the veterinary profession of the United States, in milk and meat inspection and in safeguarding the immense live stock industry of this country, and to admire that splendid veterinary organization, the Federal Bureau of Animal Industry.

In Italy, veterinary science has an old tradition. A history going clear back to the days of the Ancient Roman Empire. It may be of interest to mention that Leonardo da Vinci studied the anatomy of the horse under one of our veterinarians before painting his famous pictures. But although veterinary science in Italy is old, it is strictly up to date, as a result of being fostered by the Facist Government. We have eight veterinary colleges in which our veterinarians receive a good training. Veterinary service is maintained by the Government both for the civil population and for the army.

Every community is required by law to have a veterinarian. This is a provision of the government for safeguarding the live stock industry, upon which the welfare and the food of our people to a large extent depend. Of the four thousand veterinarians in Italy, thirty-five hundred are

*Twelfth International Veterinary Congress, Radio Address by Professor P. Rubay, Recteur de l'Ecole de Médecine Vétérinaire de l'Etat, Cureghem-Brussels, Belgium. New York, August 16, 1934.

**Twelfth International Veterinary Congress, Radio Address by Professor Dr. Carlo Bisanti, Chef du Service Veterinaire, Roma, Italy. New York, August 16, 1934.

in the service of the state or the cities. The veterinarian in each community not only guards the animals of the community against infectious disease and conducts the food inspection but also represents the government in all matters pertaining to animal breeding, which is carefully fostered by the Government.

Every community of more than six thousand population is required by law to have a public slaughtering house at which animals must be slaughtered and where they are inspected before the meat can be offered for sale. It is noteworthy that every community in Italy, even the smallest, has such an institution. This is voluntary in all the small communities.

Meat inspection is compulsory for all animals slaughtered for food. Even the farmer who slaughters one of his own animals must have the meat inspected before he can use it for food for his family. This inspection is furnished to him without charge by the official veterinarian in that community. It is a measure for safeguarding the health of him and his family—a public health measure privately applied because the health of the individual is a concern of the State.

All dairies, too, are under sanitary control and the production and distribution of milk is carefully supervised by the State or city veterinary service.

There are nine veterinary experimental stations in Italy engaged in the investigation of animal disease. They prepare all the serums, bacterins and other biological products used by veterinarians. They also furnish laboratory service for the veterinarians and assist them in every possible way in the control of epizootics.

Italy has two military veterinary laboratories in which the diseases and all other matters affecting the efficiency of army horses are constantly studied. They render a service to the army similar to that rendered by the veterinary experiment stations for the live stock industry.

I wish to thank all listeners and to express the appreciation of the Italian delegation for this opportunity to broadcast.

Veterinary Conditions in France†

The representatives of the French Government at the 12th International Veterinary Congress are particularly honored because official scientific veterinary education originated in our country in 1762, when the first veterinary college in the history of modern civilization was founded under Louis XV, by Claude Bourgelat.

At the present time, France has three veterinary schools and over 4,000 veterinarians, who are rendering our country a good service. They assure the country a scientific control of infectious diseases and a meat inspection service to protect public health and assure an ample food and clothing supply for the population. France, I am happy to say in all modesty, has furnished its proper quota of distinguished men in this field. Pasteur, Roux, Calmette, Chaveau, Nocard, Vallee, Railliet, Leclainche and others who could be named, not to omit Liautard, who, here in New York, during the 19th century, stood at the head of the veterinary profession in America.

A scene at the ship docks, Bordeaux, France.

It is with great pride that I take the opportunity of paying our respects to our colleagues in the United States.

†Twelfth International Veterinary Congress, Radio Address by Professor Jean Verge, Professor a l'École Nationale Vétérinaire d'Alfort, Alfort (Seine), France. New York, August 16, 1934.

The Veterinary Profession in Roumania*

THE veterinary profession in Roumania has reached a high state of development. There are about 1500 veterinarians; the majority of them is employed either by State or municipal governments; the others are private practitioners.

By a special decree the Roumanian veterinarians were organized into a single corporation. Thus, the stability of the profession, and the quality of the men for promotion are assured.

To portray the veterinary situation in Roumania more clearly, we may describe it under the following three headings: (1) Public veterinary service, (2) Veterinary education, (3) Military veterinary service. In addition, mention will be made of the scientific attainments, of the research institutions, and of the Roumanian veterinary medical association.

The Government Veterinary Service

About 15 years ago, the public veterinary service was a bureau of the Ministry of the Interior (Department of State). In addition, there were veterinarians in the Bureau of Animal Husbandry, which bureau was a branch of the Ministry of Agriculture (Department of Agriculture). In 1919 the veterinary division of the Ministry of the Interior was transferred to the Ministry of Agriculture and a new "Division of Animal Husbandry and Veterinary Science" (Directuinea Generala Zootechnica si Sanitara Veterinara) was created, combining all the veterinarians in the service of the State.

Thus, the enforcement of all official regulations relating to Roumanian Animal Husbandry is supervised by veterinarians. The director of the division is a veterinarian, Dr. G. Jonescu-Braila (page 371, September VETERINARY MEDICINE), a tireless worker.

The national livestock industry is, therefore, in the hands of veterinarians, who handle it with credit to themselves and to the advantage of the country. The stud farms of the State and the public breeding establishments are managed by veterinarians. The stud commission has a district veterinarian on its staff. The livestock inspectors are veterinarians. The direct and indirect governmental supervision of the national livestock industry is carried out entirely by veterinarians. This is of great advantage toward national economy, because animal husbandry is a branch of veterinary science, and, moreover, no veterinarian could ever make the crude mistakes a non-veterinarian would make.

Governmental regulations for animal husbandry are more necessary in Roumania than in other countries for the reason that this branch of production is in its initial stage there, and needs government help in various matters.

The veterinarian is further entrusted with the enforcing of the veterinary police regulations, with milk control, the supervision of the abattoirs and the inspection of meat, and also the work of the veterinary laboratories. Thus, the veterinarian exercises the rôle of sanitary police officer and of animal husbandman at the same time.

In order to secure a permanent (government) position, the veterinarian must undergo the examination for district veterinarian. For this he must wait until he had at least one year of temporary employment. The position of municipal veterinarian (in larger cities) is acquired after passing a special examination.

Each county has a chief veterinarian and a corresponding number of district veterinarians. The selection of stud animals is carried out independently for each district.

According to the statute for veterinarians the following graded distinctions exist: (1) district veterinarian, (2) county veterinarian (senior veterinarian),

*Summary by Dr. G. K. Constantinesco, Professor de Zootechnie à la Faculté de Médecine Vétérinaire, Director de l'Institut national zootechnique, Bucharest.

(3) inspector, (4) inspector-general, (5) director. Promotions are made either on the basis of years of service or by election. The final decision is made by a board of commissioners.

Veterinary Education

For a population of about 18,000,000 citizens, Roumania possesses only one veterinary college; it is a part of the University of Bucharest. At present, Professor G. Udrisky, director of the Surgical Clinic, is dean of the college. A new dean is elected every three years by the faculty. There are 14 professors and about 500 students.

The course of study lasts five years, including the examination for the degree of Doctor and the writing and publishing of a thesis. For educational purposes each department of instruction is equipped with laboratories and with provisions for practical training.

The space occupied by the college is very large. For nearly every department there exists a separate building. The campus is a beautiful garden, bordered by many old trees. A fair-sized library serves both the faculty and the students.

Admission to the college is solely by examination. As a rule, the number of applicants exceeds three to four times the number accepted.

Scientific Activities

The Roumanian veterinarians have won laurels in various branches of science.

It may suffice to mention the late Professor I. Athanasiu, who at one time was president of the University of Bucharest. He was well known, especially in French circles, by his publications in physiology. Mention must also be made of Professor Riegler, known for his researches in bacteriology; of Professor Ciuca, well known for his successful treatment of dourine; of Professor Ciurea, the famous parasitologist; of Professor Constantinescu, known for his publications in genetics; Professor Nichita, known for his investigations into the physiology of nutrition; of Dr. Cernainu, a successful investigator in bacteriology; of Professor Vechiu, who discovered a successful anti-distemper vaccine; of Professor Vladescu, known for his biochemical investigations, etc.

Mention should also be made of the preparation "Calbinol," the result of investigations by Professor Constantinescu. It is used in the control of distomiasis, and it gives splendid results in Roumania. Thanks to this preparation, each shepherd is now in a position to save his flock in a simple manner and with a small outlay of money.

Research Institutions

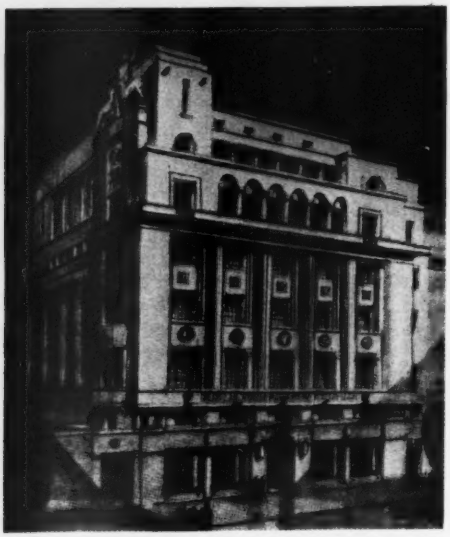
In Roumania there are two great institutions under the direction of veterinarians: the Institute Pasteur, for the preparation of sero-vaccines, and the National Zootechnic Institute for investigations into animal breeding. Both of these institutions are beehives of activity. The former manufactures sera, vaccines, mallein, tuberculin, etc., for the whole State, because the sale of these products is a monopoly of the State. The latter institute, a branch of the Ministry of Agriculture, is subdivided into nine specialized sections. The work is pursued in three directions: (1) scientific inquiry, (2) practical livestock production, and (3) propaganda.

Military Veterinary Service

Roumania employs about 300 veterinarians in army service. The veterinary corps of the Ministry of the Army (War Department) is an independent unit. sued in three directions: (1) scientific in- This corps is under the direction of a veterinary general officer. Another veterinary general officer is connected with the remount depot. Thus, the military veterinary organization of Roumania includes two officers of the grade of General. Some of the younger army veterinarians are employed as assistants in various laboratories.

The Roumanian Veterinary Medical Association

The veterinary association owns its own home in Bucharest. It is a large, palatial building, one of the most magnificent structures of the Roumanian metropolis, with a lecture hall, a fine



Headquarters of the National Veterinary Association of Roumania. This palatial 9-story office building belongs to the Association.

library, and room accommodations for those veterinarians who come to the city on temporary business. It has been built from contributions of the members, and through the aid of the Ministry of Agriculture.

His Majesty King Carol II personally participated in the ceremonies connected with the inauguration of the building.

The Roumanian veterinarians are organized into one single unit under the name of "Asociatia generala a Medicilor veterinari diu Romania." Dr. G. Jonescu-Braila is now president of the association. By tireless effort in the service of this organization during his tenure of office he has done much for the welfare of the Roumanian veterinarian.

The activities of the veterinary association consists in giving aid to widows of deceased members when in need, in supporting various interests, in holding committee meetings, in organizing yearly conventions, in the preparation of radio talks, and in issuing invitations to foreign personalities, prominent in veterinary science, to give public addresses in Roumania.

From this short sketch of the activities of the Roumanian veterinary profession it can readily be seen that the veterinary profession plays the leading rôle in the livestock industry, is the owner of a palatial building upon one of the finest boulevards in Bucharest, and numbers two generals in the army. Further, that the veterinarian is eligible to the loftiest position and honor a university can bestow. Of late some veterinarians have been members of the parliament continously. From the ranks of the profession in Roumania renowned contributions toward the progress of veterinary medicine are made, and by cooperation in the service of the country the veterinary profession labors toward the common goal of uplift and improvement.

Veterinary Magazines Celebrate Congress

VETERINARY MEDICINE, as readers know, issued a special souvenir number in honor of the congress. Many of the foreign delegates expressed their appreciation of the cordial welcome it extended to them in their own languages, and of the information it contained relative to the veterinary profession of this country, its achievements and its schools.

Two of the German veterinary magazines, the *Deutsche Tierärztliche Wochenschrift* and the *Tierärztliche Rundschau*, also issued special numbers in honor of the congress and supplied sample copies for distribution to those in attendance.

The former contained an editorial by Drs. Miessner and Wetzel, describing the veterinary profession in the United States, particularly the Federal Bureau of Animal Industry, and urging German

veterinarians to attend the congress. The front cover was embellished with a large halftone of Dr. Mohler. Halftones of various other American veterinarians were used in the issue. The editorial was

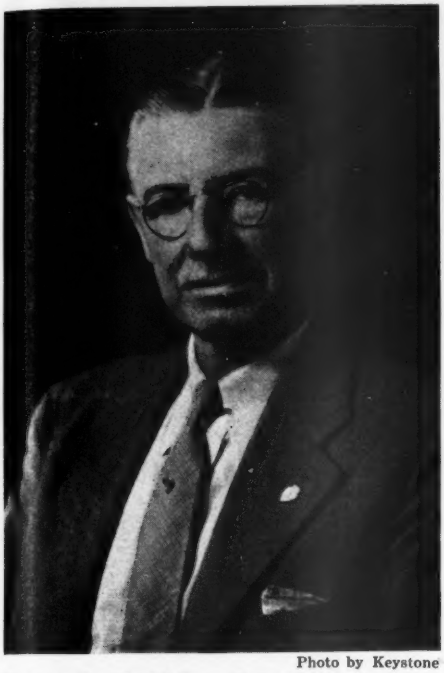


Photo by Keystone

Robert S. MacKellar, New York, President American Veterinary Medical Association

printed in both German and English. Summaries of all the articles in the magazine were given in English.

The latter had an editorial by Dr. Giese. Briefly sketching the work awaiting the congress, the writer mentioned suggestively to the prospective participants the invaluable benefits likely to be received from the exchange of ideas with the representatives from all the civilized countries on earth.

These souvenir numbers clearly reflect the importance attached to the transactions to be negotiated at the congress, and the sentiment in which the work is held by these editors.

Their consideration is greatly appreciated by the Organizing Committee.

Meeting of the A. V. M. A.

The 71st Annual Meeting of the American Veterinary Medical Association, because of the Congress, was limited to two sessions at which only business matters were considered. Dr. Robert S. MacKellar of New York, for 4 years chairman of the Executive Board, was elected president, the choice being unanimous.

This was the first meeting at which the House of Delegates, the new administrative organization of the A. V. M. A., functioned. One of its first acts was to reverse a decision of the A. V. M. A. at the Chicago and Atlanta meetings—the decision to classify the ten veterinary colleges in the country according to their merit as teaching institutions. The authority of the House of Delegates to take such action is unquestioned; not so much can be said of its morals in so doing. The A. V. M. A. had, in effect, made a pledge to perform this service for the profession and the public, the action was in reality a contractural one. That it will carry out the expressed will of the Association next year is presumed, but under the circumstances, not certain. It was not a good start for the House of Delegates.

* * * *

Hospital Ass'n Meeting

The American Animal Hospital Association held its semi-annual meeting Friday evening of the Congress week, at which an excellent program was supplied members and visitors. The question of whether the organization should continue independently or as a section of the A. V. M. A. was debated good naturedly. President MacKellar was called upon at the conclusion of the debate and addressed the association briefly, stating that in his opinion, the members of the A. A. H. A. could accomplish more through the small animal section of the A. V. M. A. than as an independent organization and that he hoped to see it adopt that course.

Kaleidoscopic Presentation of the Sessions of the Twelfth International Veterinary Congress

At a large convention, at which sessions occur concurrently, it is difficult, if not impossible, to get all the details at the time of participation. A similar experience is had at the great football games. Although the entire game is witnessed from the stadium by all the onlookers simultaneously, yet most of the spectators buy a newspaper immediately after the game, in order to impress more indelibly upon their memories the finer details of the play. To give to those who participated in the congress, as well as to those who for various reasons were unable to attend, the gist of the papers in a nutshell, is the purpose of the following digest. For a more detailed account, the official publication of the congress should be consulted.

The papers for Monday afternoon, August 13, were presented in three sectional meetings.

Section I (Pathology, Bacteriology and Contagious Diseases) had scheduled four speakers. MAZZUCCHI (paper No. 2) described his new method of anthrax vaccination. The aim of his method is to localize the anthrax bacilli, with a certain degree of virulence, to the site of injection, and to attain the slow absorption of an antigen with a high power of immunization. Viewing the edema of anthrax as a wall of defense, which retains the germs and partly neutralizes their poisons, the speaker attains the above two objects by bringing about an early appearance of the gelatinous edema around the injected bacilli of anthrax. The substance which is best suited to retard the spread of the organisms from the site of the injection and to delay the absorption of their poisons is saponin. As to the way in which the anthrax bacilli disappear from the site of the injection, it has been shown from histological investigations that the bacilli first accumulate in little clumps, which remind one of agglutination, but later on a part of them fall a prey to plasmolysis and others to phagocytosis.

From experimental studies of anthrax, and from extensive trials in the field, MUNNE (paper No. 71) concludes that the intradermic inoculation clearly helps to produce an efficient state of immunity, either by a mechanism of strict specificity or by a physiological reason which inhibits temporarily the body defenses from destroying the microbian multiplication.

Discussing lymphadenitis, CASSAMAGNAGHI (paper No. 35) states that the prophylaxis with vaccines is still at the experimental stage, and that all plans of prevention should be based on measures preventing contact.

KELSER'S paper (No. 36) dealt with Mosquitoes as Vectors of the Virus of Equine Encephalomyelitis. He has definitely succeeded in transmitting the filtrable virus of equine encephalomyelitis from guinea pigs to guinea pigs, from guinea pigs to horses, and from a horse back to guinea pigs through mosquitoes of the species *Aedes aegypti*. The transmission is not merely a mechanical one but occurs after the virus has undergone multiplication, maturation, or less probably, cyclic change within the mosquito. The mosquito is able to transmit the disease as early as six days after an infective meal and remains infectious for as long as forty-two days. Continuous close contact of normal with infected animals does not, in itself, result in spread of the disease.

Section II (Medicine, Surgery and Obstetrics) presented five speakers on Infectious Mastitis. STECK (paper No. 17) summed up by saying that the control of mastitis due to *Streptococcus agalactiae* can be rendered efficient by a combined application of three procedures: Elimination (fattening, slaughter), separation of all infected animals, and chemotherapy. MINETT (paper No. 23), emphasized that chronic streptococcus mastitis can be controlled by systematically milking infected cows last. SVEN WALL (paper No. 29) reviewed certain biological characteristics of the milk strepto-

cocci, of *Diplococcus schütz,* and of *Streptococcus epidemicus.*

CHRISTIANSEN and NIELSEN believe (paper No. 39) that under natural conditions it is hardly conceivable that mastitis infection may arise in any other than a galactogenous way. Impairment of the closing mechanism of the teat promotes the infection to a great extent. However, as most cases of mastitis develop without any preceding lesion of the sphincter of the teat, and as mastitis could not be produced artificially by external infection of the teat when its closing mechanism is unimpaired, it must be assumed that under natural conditions there must be some factors as yet unknown which govern the entrance of bacteria by way of the teat canal.

The results of the experiments of JONES and LITTLE (paper No. 55) indicate that the udder must first be sensitized to the streptococci before the organisms can establish themselves. The usual difficulty of producing infection experimentally and the irregularity of transmission by means of the contaminated hands of milkers may be explained on this basis.

Section IV (Fowl Diseases). The subject presented by both speakers was Fowl Pox. DOYLE (paper No. 41) is of the opinion that in view of the wide distribution and high incidence of fowl pox, the virulence of the disease, and its adverse effect on the poultry industry, it would appear advisable to encourage as a routine procedure the annual inoculation of all young stock with pigeon-pox vaccine until such time as the general incidence of the disease has been substantially reduced. On the other hand, JOHNSON (paper No. 69) points out that it is apparent from the results in America that pigeon-pox virus cannot be recommended for vaccination in this country.

The program for Tuesday, August 14, consisted of a general session in the morning and four sectional meetings in the afternoon.

General Session I (a) considered New Plans for Combating Enzootic Diseases under a State Veterinary Service. LECLAINCHE (paper No. 79) postulated as follows: In the first place carry on research work, evaluate the knowledge and its worth concerning methods of health. Utilize preferably, or exclusively, healthy animals for the building up of herds and replace infected ones that cannot be profitably held. Certification of healthy animals with a "certificate of health" given by the state, a state organization, or authorized private organizations, guaranteeing not only that the animals are free from the diseases covered by the certificate but that they are from herds and sales animals free from diseases. The speaker said that the delivery of these certificates would imply not only the use of the various means of diagnosis expressly prescribed but also the continued sanitary supervision of the animals. This system would consequently associate the veterinarian with hygienic procedures in the permanent control of the handling of animals.

General Session I (b) dealt with Relationship of Veterinary Science to Animal Breeding and Public Health, Legal Protection of the Practice of Veterinary Science. Of special interest to the practitioner is MOHLER'S (paper No. 54) comment upon the latter point. Legal protection of veterinary practice, he said, came as a result of the unselfish and untiring efforts of those who were members of the profession in former times, and as an outcome of constantly widening public sentiment, with the support of intelligent and cooperative legislators. The legal protection thus achieved, comparable in every respect to that enjoyed by other professions in the United States, has had an encouraging effect. With this security the profession as a whole has been imbued with higher purpose. It has contributed directly and forcefully to the extension of scientific usefulness in the community, state and nation. It has raised the veterinarian to a vital and indispensable place in human affairs. Legal protection for the practice of veterinary science is a recognized public necessity, in both a national and international sense, for the reason that the proper distribution and application of veterinary knowledge are world needs. This paper is abstracted elsewhere in this issue.

Section II (Medicine, Surgery and

Obstetrics). The topic under discussion was Diseases of Young Animals. WILLIAMS (paper No. 38) outlined the influence of the character of the forage as affected by the rainfall, and the method of milk feeding and handling of young calves. He showed that in the herd under experimentation there was extensive and serious arrest in the development of the reproductive system of dairy calves under certain deficiencies of rainfall and of feeding and handling which did not appear among the contiguous beef cattle. Radical changes in the method of milk feeding and handling were associated with normal evolution of the reproductive system, and, when breeding age was reached, the reproductive powers were essentially normal, and closely approached or equalled those of contiguous beef herds. MIESSNER and KOSER (paper No. 48) repeat the resolution of the Eleventh International Veterinary Congress in London, asking for the creation in each country of an organization, having a central seat, for the control of the diseases incident to the rearing of offspring.

SIGMUND (paper No. 50) discussed his method of handling dysentery of the newborn which is based on the following thought. First, it is necessary to evacuate quickly and effectively the digestive tract soon after the appearance of the first signs of disease, without irritation of its mucous membrane. During the second phase of the treatment, the use of bactericidal remedies is indicated. The application of constipating drugs is contraindicated. The desired laxative action is brought about in the treatment of dysentery of the newborn by the subcutaneous injection of a combined solution of arecolin and pilocarpin. A mixture of carbovent and salicylic acid *per os* has proved to be a suitable bactericide, if administered after evacuation of the digestive canal. It cannot be denied that specific serum-therapy is also serviceable in the contest with dysentery of the newborn, especially from the prophylactic standpoint. In clinically developed dysentery, however, a rational chemotherapy of the digestive tract should be placed in the foreground.

Section III (Veterinary Parasitology and Parasitic Diseases). PERARD (paper No. 22), discussing coccidiosis in animals, said the treatment of the affected animals is a delicate operation that rarely gives good results. It is difficult to reach the intracellular parasites without destroying the intestinal epithelium. It seems preferable to direct attempts toward obtaining an intestinal pH that is unfavorable to the development of the parasites. Treatment exclusively by feeding milk without the addition of any medication, deserves wide experimentation.

Section IV (Fowl Diseases). BEACH (paper No. 30), discussing Coryza and Other Respiratory Infections in Chickens, is of the opinion that ultimately these various coryzas will be shown to be variants of one infection rather than separate disease entities.

DE BLIECK (paper No. 65) concludes that the *Bacillus hemoglobinophilus coryzae* discovered by him is the sole cause of roup. This coryza bacillus is to be placed in the influenza group, on the basis of detailed investigation concerning its growth behavior. The cultural characteristics upon various nutrient media as well as complement fixation, justify this classification. The bacillus is pathogenic solely for chickens and turkeys. Repeated instillation of formalinized exudate and of formalinized cultures into the nasal cavities of chickens resulted sometimes in a mild form of coryza, having a long incubation, but running a short course. When the formalin was left to act upon the infective matter for a very long time, no infection resulted.

On the subject of Psittacosis (paper No. 20), MEYER stated that the Levinthal-Cole-Lillie bodies possess the same diagnostic value as the Negri bodies in rabies. They are probably the animate, particulate virus. The number of L.C.L. bodies runs parallel with the virulence.

Section V (Tropical Diseases). YAKIMOFF (paper No. 32) discussed the piroplasmoses, and HORNBY (paper No. 53) the classification of piroplasms. Leptospirosis Ictero Hémorrhagiae in Dogs was the theme of KLARENBECK (paper No. 4). He considers

infection of man by dogs possible. From the standpoint of veterinary medicine this disease is of importance because the variable symptoms of the disease and prominence of the disturbance of the liver and kidney make difficult a differential diagnosis between this and other diseases. NIESCHULZ (paper No. 62) discussed African Horse Sickness. DU TOIT (paper No. 52) reviewed our knowledge on anaplasmosis.

The sessions Wednesday, August 15, comprised a general session of Section I in the morning and three sectional meetings in the afternoon.

Section I (Pathology, Bacteriology and Contagious Diseases) presented eight papers. Six of them dealt with tuberculosis and two with hog-cholera. WATSON, speaking on B.C.G. vaccination (paper No. 6), raised the question as to whether it is an asset or a liability in prophylaxis and tuberculo-immunity. He states that preallergic B.C.G. vaccination of calves and the resulting state of allergy and post-allergic revaccinations have not afforded adequate protection against infection and typical tuberculosis developing either from or in the presence of primary tuberculosis in the large majority of cattle so treated. VAN HEELSBERGEN (paper No. 15) is inclined to view with considerable doubt the statement that a special destructive action against tubercle bacilli exists in B.C.G. foci. GUERIN (paper No. 16), discussing the Prophylaxis of Bovine Tuberculosis, finds himself confronted with two irreconcilable theses of prophylaxis. The scientific and rational one considers the tubercle bacillus, on account of its dissemination, as an unavoidable adversary which we must know how to fight by taking advantage of the fortunate characteristics which the bacillus has put at our disposal in the generalization of the allergic state through vaccination. The second, inoperable and antiquated thesis, aims at providing for the cattle that theoretical state which would result from the destruction of the last tubercle bacillus, and the consequent elimination of the allergic state. Guerin thinks that the latter method might be justified in countries with a low tuberculosis morbidity and with extensive financial resources, if it did not rest upon the erroneous belief that a herd free from tuberculin reactors today is definitely protected against infection. From WIGHT (paper No. 21), summarizing Eradication of Tuberculosis Among Livestock in the United States, we learn that there are now under supervision for the eradication of tuberculosis 4,600,000 herds, containing 43,000,000 cattle, which is about 65% of the total number in the country. Cooperating veterinarians have applied approximately 130,000,000 tuberculin tests to cattle. As a result about 3,000,000 reactors have been removed and destroyed. ZWICK (paper No. 67) accentuates the fact that success in the fight against tuberculosis depends largely upon livestock men being convinced of its benefits, and persevering and competent in their cooperation, but especially on the cooperation of well-trained veterinarians. The results will be the greater, the more the diagnostic method is improved and refined. BUXTON (paper No. 78) has evidence that the strain of B.C.G. used throughout his experiments is avirulent for calves. The degree of increased resistance varies within wide limits and appears in general to be directly proportionate to the dose of vaccine. The dose considered by the speaker to be most satisfactory consisted of 10 mg. followed three weeks later by 100 mg. given intravenously. There was a progressive decrease in resistance with the extension of the period between vaccination and the administration of the test dose.

DORSET presented a paper (No. 28) on the Simultaneous Inoculation Against Hog Cholera. He said that the preponderance of evidence is against the contention that immunity in hog cholera is due to a permanent infection with the virus. He maintains that a careful adjustment of the serum and virus is not necessary, since the needed response takes place even when the dose of serum is greatly in excess of the amount required to prevent the development of visible symptoms in the inoculated animal. MICHALKA (paper No. 49) insisted that the commercial production of anti-hog-

cholera serum and hog-cholera virus should be placed under government control in all countries. The simultaneous vaccination should be carried out according to uniform principles by specially trained veterinarians with experience in the control of hog-cholera. A standardization of the methods of titration of anti-hog-cholera serum in accordance with strictly quantitative principles would be highly desirable. A minimum titer of 0.5cc. per kilogram of body weight should be required of every commercial serum, at the present time.

Section II (Medicine, Surgery and Obstetrics) presented five speakers. GOTZE (paper No. 40) reviewed our present knowledge of Parturient Paralysis. He stated that the really ideal success in research in milk fever and in related diseases will not be achieved by the discovery of this or that therapeutic method, but first by an appropriate nutrition which will keep the visceral nervous system balanced even during pregnancy and during full lactation, and secondly, by the elimination of cows possessing hereditary characters which are below the average.

Treatment of Hypocalcemia

In discussing from the floor the subject of Milk Fever, Prof. J. Russell Greig, Edinburgh, Scotland, said:

Since March, 1925, when Dryerre and I enunciated our original theory which postulated that milk fever was associated with an acute hypocalcemia, much experimental work on the disease has been performed.

The experimental evidence furnished later by ourselves and by Little and Wright, Sjollema, Fish and others is now such that there is little, if any doubt, that the milk fever syndrome is immediately dependent upon acute hypocalcemia.

This hypocalcemia can be quickly overcome and the disease as quickly cured, either by the injection of readily assimilable calcium salts or by inflation of the udder which, as I was able to report at the Eleventh International Congress at London in 1930, produces its curative effect by its action in raising the blood calcium concentration. The process of cure being directly related to the rise in the calcium concentration—as the blood calcium rises so the symtoms disappear.

It is conceivable that so marked a fall in calcium will provoke other disturbances in the general metabolism but, so far, no constant deviation from the normal, other than acute hypocalcemia, has been demonstrated in milk fever.

It has been suggested that the blood-calcium deficiency is not the immediate cause of the attack but that it permits the absorption of, as yet, undetermined toxic metabolites which are the actual exciting factors. This may or may not be so. At present such an opinion must necessarily be merely speculative.

It is of greater importance to inquire into the cause of the sudden and catastrophic fall in blood calcium. It should be clearly recognized that in milk fever the cow possesses within her body an abundance of calcium which, however, is contained in the bones. The trouble lies in an inability to mobilize the calcium quickly enough and to transfer it from the skeletal reserves to the blood.

We know how intimately the mobilization of calcium depends upon parathyroid secretion, and it is further recognized that during pregnancy the calcium of the mother is, so far as may be, conserved so that the needs of the developing fetus may be met. It has been suggested that during pregnancy the parathyroids are therefore relatively quiescent. Then comes parturition, and if this be easy and uncomplicated and if, consequently, the onset of the lactation be abrupt and milk secretion profuse (such as occurs in cows after the third calving) there results an urgent demand for the rapid transference of calcium from bones to blood and from blood to milk. It is to be remembered that the colostrum removed from the udder in a single milking contains far more calcium than exists in all the blood at any one time. Unless then the parathyroids be active the calcium mobilization fails; blood calcium falls and the tetany-coma syndrome which has been shown to result from experiment-

ally produced hypocalcemia is manifested in the condition we call milk fever.

This conception of the pathogenesis of the disease is essentially that postulated by Dryerre and myself. But, again, it is largely speculative and much further experience must be gained before precise knowledge can be reached.

At present we, at the Moredun Institute, Edinburgh, are conducting experiments into rational methods of prevention by means of feeding minerals with and without the addition of substances rich in vitamine D; by the administration during the last week of pregnancy of massive doses of irradiated ergosterol and by the injection of assimilable salts of calcium immediately after calving. It is yet too early to report upon these experiments as a whole but it can be said that in the case of highly susceptible cows the subcutaneous injection of one to two ounces of calcium gluconate immediately after calving and preferably repeated 20 hours later has in the hands of many practitioners proved an effective preventive.

In London in 1930, two years after our introduction of the subcutaneous injection of calcium gluconate as a curative treatment in milk fever, I could report upon only 100 cases in which the treatment had been applied. The results, however, were such that it was even then apparent that a treatment, the efficacy of which was equal to that of mammary insufflation, had been obtained.

Today, I have no hesitation in stating that calcium therapy (exclusive of all other treatment), if properly applied, can be relied upon to effect complete recovery; indeed many practitioners have now entirely discarded the udder pump. I shall not discuss the several advantages which the new treatment possesses, but rather refer to its two disadvantages. These consisted in the high cost of ampouled solutions and in the fact that if solutions were prepared extemporaneously they required to be given in relatively dilute form (5 per cent) and therefore the volume of fluid injected, if it were to contain an adequate dose of calcium, required to be large (2 pints). Such injections were not infrequently followed by considerable swelling and even abscess formation.

Doctor Hayden of Cornell has recently overcome these difficulties by his discovery that boric acid markedly facilitates the solution of calcium gluconate. This marks a distinct advance in the treatment and I would suggest the employment of the following formula which we have found highly effective:

Calcium gluconate	2 ounces
Boric acid	3 drams
Water	12 ounces

The mixture is boiled and will thereafter remain in complete solution for a prolonged period.

The solution may be injected at three or four points. The small amount injected at each point and the fact that the addition of boric acid appears to facilitate absorption obviates the occurrence of local irritation at the injection site.

Subcutaneous Injection Best

It is preferable to employ subcutaneous rather than intravenous injections, because in the case of the latter the calcium is very rapidly absorbed and rapidly excreted with the consequent possibility of relapse. It is frequently a matter of difficulty to make an intravenous injection in milk fever and if calcium chloride be employed a slough may result unless the injection be very perfectly performed.

General Calcium Therapy

Within the last four years calcium therapy has also proved of specific curative efficacy in the partureent hypocalcemias of ewes, goats, cows and bitches, and in that condition known as "transit tetany" in the mare.

Favorable reports have been received of its use in the treatment of purpura hemorrhagica, and it is also being employed experimentally in equine hemoglobinuria.

In cattle there occur a number of conditions at present classed under the generic name "staggers." A proportion of these yield rapidly to calcium therapy and it is probable that such cases are associated with hypocalcemia (I have no experimental evidence upon the matter). On the other hand many cases of conditions unassociated with

hypocalcemia are erroneously treated by calcium therapy with consequent failure and disappointment.

Reestablishes Rumination

In Britain, a condition characterized clinically by acute impaction of the rumen and by constipation is frequently met with in cows which possess deep milking qualities and which have been intensively fed for high milk production. In a limited number of such cases, which we have examined, the blood calcium concentration has proved to be below the normal range. We know that a lowered blood calcium is associated with paresis of the alimentary tract and the injection of calcium in such cases is followed by the rapid resumption of peristalsis.

In conclusion, I would be glad to take this opportunity if I may of expressing the appreciation of Dryerre and myself of the progressive spirit which has prompted the practice of the new treatment, on so large a scale, by American veterinarians.

From his Observations on Sterility of Cattle in South Africa, QUINLAN (paper No. 9) found that infertility in the bull, although of economic importance, does not play such an important rôle as in the cow. The necessity, however, for a careful genital examination of all males, prior to and during the breeding season, is essential. The morphology, differential count, and duration of vitality of the spermatozoa *in vitro* are good indicators of potential breeding power in the absence of breeding history. He suggests that uterine hypoplasia and atrophy of the uterine mucosa, seen in some heifers, are of constitutional rather than of infectious origin, if there is no history of genital disease. According to FREI (paper No. 43), the explanation for the disorders incident to parturient paresis is found in the close relationship between the visceral nervous system and the electrolyte system. He assumes that a change of the tonicity of the visceral nervous system exists during estrus, as likewise in cases of persistent corpus luteum during endometritis purulenta. BOYD (paper No. 46) emphasized that veterinarians should at all times keep in mind that the corpus luteum is a normal ovarian structure and that its removal should be attempted only after a thorough consideration of the history, as well as a careful physical examination, of every case. The removal of the corpus luteum is contraindicated in animals feeding largely or wholly on sweet clover hay. SCHOTTLER (paper No. 68) contended that the enucleation of the corpus luteum gravidatis, which has been recommended for the induction of abortion, is difficult to perform during pregnancy because the corpus luteum is usually not sufficiently set off from the ovary. Even shortly before delivery, several yellow bodies could be enucleated on laporatomy, indicating that gradual resorption does not necessarily take place at the end of term; the ovary of the fertilized horn, on the other hand, can rarely be reached per rectum so that enucleation, which has been recommended as a treatment of retantio secundinarum, can rarely be accomplished.

Section III (Veterinary Parasitology and Parasitic Diseases) produced four papers. Discussing Therapeutics of Worm Diseases, HALL (paper No. 24) said that in a few cases, large-scale, nation-wide compulsory campaigns have been carried out. In some of these cases eradication has been attained, and in others eradication is in sight. The results point very definitely to the necessity for large-scale operations to achieve real control of parasites, and indicate that such operations, financed by relatively large expenditures over short periods of time, pay for themselves very promptly, whereas small-scale operations do not achieve real control, and must be repeated indefinitely to give even limited benefit at the points where the parasites are doing the most damage. SKRJABINE (paper No. 80) proposed unification of the international veterinary helminthological nomenclature and the designation of all the helminthiases according to the designation of the genera of the organisms involved. CAMERON (paper No. 10), speaking of Immunity Against Animal Parasites, held that there is little evidence yet of a true acquired immunity

against adult helminth parasites. It seems probable that hypersensitiveness is a normal defense reaction of the body. There is no evidence that any of the animal parasites produce a true toxin. KOTLAN (paper No. 77) stated that there exists a definite acquired resistance or immunity to protozoan and metazoan parasites, based on a specific activity of the general defense mechanism of the host.

Section VII (Animal Breeding and Dietetics). Two of the speakers presented papers on Genetics, and two on Blood Groups. CONSTANTINESCO (paper No. 57) proposed the extension of instruction on genetics in veterinary colleges. LETARD (paper No. 61) uses our domestic animals as an illustration that the science of genetics can explain hereditary phenomena which at first appear to be disconcerting. It is on this science that the breeder should rely for the improvement of his livestock, even though this improvement cannot be brought about for many years hence. SZYMANOWSKI (paper No. 26) stated that from a biochemical point of view the blood groups in animals are by no means identical with the same groups in man. Cross-agglutination between two species is not at all the rule, but the exception. The groups in animals are sometimes difficult to define. Agglutination is much weaker. In spite of difficulties, it was possible to prove the existence of a group differentiation analogous to that found by Landsteiner in man, for all species of animals examined up to the present. SCHERMER (paper No. 27) reminds us that with all domestic animals the characters of the corpuscles are subject to the Mendelian law and are dominant over those that are missing. The characters of serum differ. Researches on blood groups in veterinary medicine will make it possible to prevent accidents in making blood transfusions, to decide whether a certain animal is the offspring of certain parents or not, and finally, to render important assistance to animal breeding and to place genetics on a solid foundation.

Thursday, August 16, seven sessions were held, four general sessions in the forenoon, and three sectional meetings in the afternoon.

General Session II (a) dealt with the Veterinary Control of the Marketing of Milk. VON OSTERTAG (paper No. 56) cited the fact that milk is not to be considered injurious in cases of European streptococcic mastitis caused by *Streptococcus agalactiae*, in contrast with the American mastitis caused by *Streptococcus pyogenes*.

General Session II (b), with the subject of New Researches on Filtrable Viruses, had two papers. MANNINGER (paper No. 63) is forced to admit that we do not yet know whether ultraviruses are animate or inanimate agencies. Many observations point towards their being active organisms; for instance, their ability to multiply and the striking similarity between ultravirus diseases and the infectious diseases of bacterial origin. One may also be able to establish analogies which favor the theory of the inactive nature of the ultraviruses. It is possible that both views are correct. At any rate, it seems that the group of causative agents, commonly called "filterable viruses," represents a mixture of a heterogeneous nature. He suggests that we discontinue use of the words "filterable virus" and use therefor "ultra-virus." GERLACH (paper No. 66) informs us that recently the term "virus-enzyme" has been coined with the purpose of expressing thus the striking similarity of the filterable viruses to the true enzymes, and the distinguishing characteristic of their ability to reproduce. The filterable viruses seem to hold a unique position with regard to their antigenic behavior, by which they differ from the higher microorganisms. The antibodies obtained by immunization with filterable viruses are in marked contrast with the type of antibodies occurring in antibacterial sera. After recovery from some of the diseases caused by filterable viruses, the supervening immunity may be of long duration and of a high titer; the reason for this is unknown.

General Session II (c) dealt with New Researches on Contagious Abortion. Three papers were presented. BANG (paper No. 51) mentioned that when present in fairly

large numbers in the udder of the cow, the abortus bacilli may produce secretory disturbances similar to those observed in other latent infections of the udder, but the change in the amount of lactose and chlorine, and the increase in catalase and in cell count are considerably less pronounced than in the latent streptococcus and micrococcus infections. Abortus bacilli do not multiply in the milk after it is drawn from the udder. COTTON concludes his paper (No. 60) on New Researches and Developments on Contagious Abortion with the statement that vaccine prepared from avirulent strains gave indifferent results, but from strains of low virulence gave unmistakable evidence of inducing a substantial and lasting immunity without, except in rare instances, invading the udder. Calfhood appears to be the best time for the use of vaccine. FINZI (paper No. 64) believes live vaccines to be dangerous and, therefore, not advisable; dead vaccines he considers nearly useless. Vaccines have given favorable results only when the measures of the sanitary officials were strictly applied. It is upon these stringent sanitary measures that we must rely today, waiting for a vaccinal product really active and not dangerous either to man or animal, and capable of making our task easier.

Section I. In the General Session (Pathology, Bacteriology and Contagious Diseases), two papers on Foot-and-Mouth Disease were delivered. TRAUM (paper No. 58) made it clear that until further information is available, outbreaks of vesicular exanthema of swine and vesicular stomatitis in the United States will not be subjected to the severe measures of eradication practiced in foot-and-mouth disease, with their expensive and restrictive quarantines. Circumstances can be conceived, however, when, in a somewhat rapidly spreading disease like foot-and-mouth disease, in which a diagnosis is impossible for some time, it may be desirable to use the slaughter method without severe quarantines. FLUCKIGER (paper No. 70) favors the opinion that as long as satisfactory, practical, preventive measures are still unknown, the slaughter of all animals having foot-and-mouth disease seems to be the only efficient method for the eradication of the permanent carriers and the final suppression of foot-and-mouth disease. This method will be the more effective, the larger are the areas wherein it is to be employed. For this reason it is recommended that the personnel of the veterinary sanitary police in every country should favor the practice of slaughtering all animals having foot-and-mouth disease.

Section I. The sectional meeting had three speakers, each one of them discoursing on some phase of Paratyphoid Diseases. CLARENBURG (paper No. 14) held the following suggestion desirable for combating infections in man due to Salmonella from salmonelloses of animals: Compulsory notification of salmonelloses of animals; minute differentiation of Salmonella occurring in man and animals; collaboration between physician and veterinarian and police; uniform methods for the determination of types; distinct description of the genus Salmonella. MURRAY (paper No. 37) discusses the paratyphoid diseases recognized as of most importance in America. A classification of the paratyphoid diseases of animals is given by STANDFUSS (paper No. 73).

Section VI (Hygiene of Meat and Milk) presented one paper on the Test to Demonstrate the Pasteurization of Milk, and three papers on Meat Inspection. ZELLER (paper No. 47) admits that after surveying the numerous methods reported to be in use for testing the duration of pasteurization of milk, one is forced to conclude that up to this time there does not exist a single method which would enable one to recognize with any degree of certainty milk that has been pasteurized according to directions, that is, heated between 62° and 65°C. for one-half hour.

BERGER (paper No. 13) specified that the basis of an international regulation of meat should rest with the official meat-inspection service in all countries desiring to export meat or meat products submitted to different processes of preservation. To give maximum guarantee to importing countries, the

inspection should be specially studied in regard to products reserved for exportation, and this study in the different countries interested could be carried out according to a specified system. YOUNG (paper No. 72) suggests that all meat intended for export should be examined by government-appointed veterinary surgeons, and that as far as possible a uniform agreement be adopted as to the standard of examination and fitness for human consumption of the products imported. JOSS (paper No. 76) gave a survey of the National Meat Inspection in the United States of America.

Section VII (Animal Breeding and Dietetics) listed two papers on Deficiency Diseases, and two papers on Nutrition. MAREK and WELLMANN (paper No. 34) state that in uncomplicated cases, the therapy of rachitis and osteomalacia, as well as their prevention, is successful through securing an optimal calcium and phosphorus supply, through direct vitamin-D treatment with vitamin-D preparations and cod-liver oil, or through indirect therapy with ultraviolet rays for the activation of ergosterin which is present as provitamin in the body. HART (paper No. 12), discussing Deficiency Diseases, mentions the importance of supplying dietary essentials as far as possible in natural foods. When special mineral or vitamin preparations are required they should be obtained under their trade names rather than in proprietary mixtures. The latter are usually sold at excessive prices compared with their actual cost.

LINTON (paper No. 25) maintains that as the dog is still a carnivorous animal, his diet must contain a proportion of fresh raw flesh. This is definitely essential for young growing dogs, and raw liver, spleen, and kidney are particularly valuable in this respect. Crushed bones or bone flour should always be given to pregnant and nursing bitches, and also to puppies. Fresh horse flesh, if obtained from grass-fed animals, is quite as good as ox beef. STANG (paper No. 81) advises us that in the setting up of feeding plans, the wholesomeness of the feed must be taken into consideration with reference to the preservation of health of animals. The new feeding methods with reference to performance lay greater stress on providing minerals. The need of minerals is, to be sure, being over-estimated, but a long-continued lack of them causes disturbances and diseases. Whether the protein or the mineral or both are the cause of the sterility remains to be investigated.

Friday morning, August 17, three sectional meetings were held.

Section I (Pathology, Bacteriology and Contagious Diseases) included three papers on Gas Edema Diseases, and two on Infectious Anemia of Horses. SCOTT (paper No. 11) said that Blackleg filtrates and anacultures (bacterins) treated with formaldehyde, acetaldehyde, and merthiolate have greater aggressive strengths than products treated with phenol, chlorpicrin, or phenylmercury nitrate. KRANEVELD (paper No. 8) limited his discussion to the Gas Bacillus Infections common in the Dutch East Indies. MIHAILESCU (paper No. 32) confined his remarks to the problem of gas edema in cattle. He thinks it necessary to provide polymicrobic and polyvalent antigangrene serums in order to be able to combat these diseases successfully. For their prevention he recommends the use of a polymicrobic and polyvalent vaccine.

VON MOCSY (paper No. 18) pointed out that all attempts to develop an effective treatment for infectious anemia, as well as experiments to produce an active or passive immunity, so far have proved unsuccessful. Spread of the disease may be prevented by the slaughter of all affected animals, further by the improvement of the sanitary conditions of stables, and by the application of strict control measures in the traffic of exposed or suspected horses. KRAL (paper No. 19) mentions that treatment with immune serum, blood, vaccine, liver, and chemotherapy sometimes seems to make a "clinical" cure possible. Complete cure, with a simultaneous disappearance of the infectiousness, never was possible. For the purpose of eradication of the disease and especially for the selection of horses for serological institutes, it would be well to recommend that all horses with infectious anemia

be marked uniformly and internationally with the brand "I.A."

Section II (Medicine, Surgery and Obstetrics) was represented by four papers. POMMER (paper No. 31) spoke on Röntgen Diagnosis and Therapy in Veterinary Medicine and Surgery. He emphasized that a well-organized veterinary hospital, either concerned with surgical, interne, or obstetrical cases, must incorporate today a Roentgen institute in such a manner that the roentgenologist, as in human medicine, is consulted by the clinicians. Fluoroscopy and Roentgen photography, in conjunction with clinical methods of examination, bring about an important improvement in the making of diagnoses. Superficial and deep therapy can help in many cases in which other remedies have failed. GUARD (paper No. 44) unfolded the Recent Progress in Veterinary Surgery in the United States. FORSSELL (paper No. 59) described the Surgical Treatment Against Crib-Biting. The operation consists of the excision of the sterno-mandibularis, omo- and sterno-hyoideus muscles, together with the sterno-thyroideus, in the upper half of the neck. To avoid tension of the recurrent nerves, the atlanto-occipital joint must never be stretched to its full extent, but only so that the nose forms an angle of at least 30° with a line running in the direction of the neck. To prevent wind-sucking, a flute-bit is recommended in which the perforated pipe is replaced by iron rods. HOBDAY (paper No. 74) outlined the Recent Progress in Veterinary Surgery in Great Britain.

Section IV (Fowl Diseases) provided seven papers for discussion. Two papers were on Pullorum Disease, one on Fowl-Plague, two on Leukemia, and two on Neurolymphomatosis. VAN ROEKEL (paper No. 1) regards the confidence and cooperation of poultrymen as the prime essentials for a successful eradication of pullorum disease. He desires further simplification and uniformity of grade terms as applied to tested flocks. To guide the future policies of this work in an expedient manner, the compilation of reliable testing records seems necessary. WAGENER (paper No. 75) emphasized that uniformity of the pullorum antigen in the various countries, subject to international agreement, should be the goal. The reliability and efficiency of the blood examination depend upon its execution in the hands of well-trained and experienced veterinarians. Blood examination is not within the province of the layman. LEYNEN (paper No. 45) urges the continuance of research in fowl-plague. He said that methods of immunization can be a powerful aid in antipest prophylaxis in the countries where fowl-plague prevails to an enzootic extent. In countries where fowl-pest appears only following importations of poultry, control and sanitary police measures both at the frontier and in the interior of the country have demonstrated their entire efficiency. Any form of curative treatment only retards the disappearance of the disease.

JARMAI (paper No. 3) informs us that on account of the biological qualities of the transmissible agent and the pathogenesis of the disease, the opinion has been accepted by the present-day investigators that leukemia of chickens is not an infectious disease but a tumorous illness and, further, that the transmissible agent is not an independent living organism but an enzymic product of exuberant cells of leukemia. STUBBS (paper No. 7) discussed the various forms of Leucosis. Erythroleucosis and myeloid leucosis are closely related and apparently are due to the same cause. Lymphoid leucosis is the condition in which there is a marked cellular infiltration of tissues, particularly the liver and spleen.

PATTERSON (paper No. 5) concludes that Neurolymphomatosis gallinarum and the lymphoidlike, erythroid, and myeloid types of leukosis, are all expressions of the same disease. He states that the evidence indicates that fowl leukosis is an infectious disease, caused by a filterable virus. DORBERSTEIN (paper No. 42) states that there seem to be certain connections between the infectious fowl leucosis of Ellermann and the neurolymphomatosis. The relations are not yet well understood.

Sodium Hyposulphite In Cane (Hydrocyanic Acid) Poisoning

A Prompt Specific, Used Intravenously

BEING located in a section where the drouth was very severe, I have been called upon during the past few weeks to treat a comparatively large number of cases of poisoning from the sorgum plants, including Kaffir corn, atlas sorgo, Sudan grass, etc.

In many cases, when only a few mouthfuls of the wilted forage were consumed, death would result in a few minutes. Some cases, however, linger long enough for the owner to get a phone call through to the veterinarian and if no time is lost, some animals are still alive upon his arrival. Generally, though, there were more dead than live animals when I arrived.

My first call to visit animals affected with this condition was five miles out. There were five dead and four living when I arrived on the scene. Those living were still on their feet but walked with a very uncertain stride. Some presented a wild appearance and the others appeared drowsy. Each was treated with 40cc of a 20% solution of sodium hyposulphite intravenously. All recovered.

Upon returning to the office, another call seven miles out was waiting. Arriving at this farm, I found four head of nice big Holstein milk cows dead and two in a dying condition; one of which the owner thought was dead. The contents of the rumen was flowing out through its mouth and nostrils. We went on to the other cow and gave her 40cc of the sodium hyposulphite solution. About this time we discovered that the other cow was occasionally catching her breath. Knowing that no harm could be done, I decided to inject 100cc of the solution and see if there would be any reaction. Almost immediately the animal started to breathe in a normal manner and in a few minutes began to attempt to roll up on her brisket. We assisted her and she maintained that position and began chewing at the dirt. Some loose salt was placed before her and she began licking at it. We went back to the first cow and rolled her up on the brisket. Within an hour both of these cows were on their feet and apparently about as well as ever. The one that was so near death, however, developed mechanical pneumonia and died five days later.

My next cases were two big, fat, shorthorn cows, both down and unable to rise. I gave 40cc of the sodium hyposulphite solution to each, intravenously. One of these animals was bloated. A trocar was inserted and the animal rose quickly and ran off across the field, carrying the instrument with her. The other animal was encouraged a little and she rose to her feet and walked to the barnyard, a distance of about one-quarter of a mile. The other cow was driven to the barn and the trocar removed. Both these animals appeared as well as usual except that they seemed a little drowsy for a half hour or so.

Many cases such as these described have been treated since with 100% recovery. A few cases have been given a dose of calcium chloride along with the sodium hyposulphite, but the behavior of the animal was no different than when only the sulphite was used. It is the writer's feeling that any animal, poisoned on any of the sorgums, will recover if given from 40cc to 80cc of a 20% solution of sodium hyposulphite intravenously any time before breathing ceases. I also feel that all veterinarians located where sorgums are grown should carry a supply already prepared for immediate use, especially during the hot months and the early fall when frost is likely to cause the forage to be deadly poison, for the reason that time is too precious after the call comes in to spend it in the preparation of the solution.

J. E. Stanton,
Valparaiso, Nebraska.

Lavage and Gavage in Dog and Cat Practice*

By J. GILBERT HORNING,
Houston, Texas

THE writer is fully cognizant of the fact that lavage of the stomach and gavage by introduction of a hollow tube may have been practiced by primitive people for their own relief as well as that of their animals from time immemorial. In the history of medicine much data has been published about the invention of the stomach tube and its practical employment in both veterinary and human medicine to relieve the sick. I shall endeavor to present this data chronologically.

Alexander Monro of Edinburgh, Scotland, editor of the Comparative Anatomy of 1744, is without a doubt the first to employ lavage and gavage in a practical measure with the stomach tube he invented and used on cattle in 1763 (Monro: De Dysphagia, Edinburgh, 1797). The tube he used had for its tip a brazen pipe two inches long, the same size as the tube, pierced with a number of holes. The tube itself was made of an iron wire one-tenth of an inch in diameter that had been twisted around an iron rod to make it cylindrical in form and the full length was possibly over six feet. It was made smooth by a covering of soft leather, and the stillette consisted of an iron wire. He used a mouth speculum made with boards, the upper and lower plates being one foot in length and three inches wide and the screws separating the plates being six inches in length. Attached to the upper end of the tube was a bellows with a valve at its muzzle and one at the side to allow the gas to escape and by pumping the bellows, suction could be created to remove fluid and gases from the rumen. Medicaments and liquid food could be injected into the rumen through the tube.

This tube was used extensively in the treatment of bloat in cattle and is mentioned in the "Complete Cow-Doctor or Farmer's Companion," a book treating on common disorders of cattle, their causes, symptoms and cures, written by one Joseph Rowlin of Cumberland. The first edition was published in London, 1792, the second edition in 1799, and the third in 1804. The editor was R. Walker of Macclesfield. He describes the Monro tube as being used in yew poisoning and tympanites. This was also mentioned in the "History of Veterinary Literature," Volume II, pages 902-912; by the late Major-General Sir Frederick Smith.

In this account of Monro's tube, which was mentioned annually in his lectures, there is a letter quoted from a former student of Monro's dated 1779, in which he says that hearing what Monro said at his lecture about the tube, he would like to inform him that his grandfather, a grazier of Norfolk, always treated his cattle that swelled after eating clover, by passing a stiff cart rope into the stomach which let out the gas and produced an immediate cure.

The second to employ the stomach tube for practical purposes in medicine was John Hunter, a famous surgeon of London, who on September 21, 1790 read to the Society for the Improvement of Medical and Surgical Knowledge "Artificial Mode of Conveying Food and Medicine into the Stomach" and describes it as effecting a cure in a case of paralysis of the muscle of deglutition. The apparatus he used was made of fresh eel skin of rather small size, drawn over a probang and tied up at the end where it covered a sponge, then tied again close to the sponge where it was fastened to a whalebone. A small longitudinal slit was made into it just above this upper ligature. The other end had a bladder and a wooden pipe attached similar to that used in giving a

*This series of articles was prepared for concurrent publication in this magazine and the Veterinary Journal, London.

clyster, the pipe being large enough to let the end of the probang pass into the bladder without filling up the passage. The probang thus covered was introduced into the stomach and the foods and medicine were placed in the bladder and squeezed down through the eel skin. He states that this tube produced no irritation and allowed great liberty to be taken inasmuch as it was smooth, pliable and readily passed into the stomach. But as cases of this kind might occur where eels could not be procured, it was stated that a portion of the gut of any small animal, as a cat or a lamb, might be substituted.

Alexander Monro III, Professor of Anatomy at the University of Edinburgh and a distinguished comparative anatomist and physiologist, in his inaugural thesis, "De Dysphagia," in 1797 recommended the stomach tube for use in cases of poisoning, for the extraction of poison from the stomach and also recommended it for the introduction of food into the stomach in cases of dysphagia and for the extracting of gases and food from the stomach in cases of gastric fermentation in cattle, calling attention to the use, thirty years earlier, of the stomach tube invented by his father, which has been described.

Baron Larrey, Sr., French Army Surgeon, records the use of a stomach tube for artificial feeding and for the withdrawal of stomach contents (Larrey: Mémoires de Chirurgie Militaire, Paris, 1812). This was in 1799 and was used by him with success in the nourishment of tetanus patients and in the case of Marshal Murat, who had a badly wounded neck. In statements by some writers they seem to attribute Larey's employment of the tube as that of simple esophageal intubation, basing this on the fact that he stated, "We could not determine whether the tube was in the larynx or pharynx until a few drops of liquid had been introduced—if in the former, a suffocating cough was the result." Even in writings of today on passing the stomach tube, it is recorded that on occasions the tube is passed into the larynx. Text books caution about this and record possible cases of death from introducing lavage fluid into the trachea in consequence of the operator not recognizing the wrong entrance of the tube. Hence Larrey's directions are not amiss even now. A study of the Baron's handling of the cases treated, leaves no doubt in my mind that the flexible tube used by Larrey entered the stomach, as it would have been impossible for him to have accomplished withdrawing the contents of the stomach by a simple esophageal intubation.

Dr. Philip Syng Physick, Professor of Surgery at the University of Pennsylvania, successfully employed the stomach tube in cases where poisonous substances had been swallowed, by injecting fluid through the tube with a syringe and withdrawing it, thereby enabling the practitioner to remove such noxious substances from the organ, (Physick: Eclectic Reportory and Anyl. Rev., 1812. Friedenwald: Johns Hopkins Hospital Bul., September 1903). That was prior to 1800. He recommended this method of treatment in his lectures on surgery. He employed a large flexible catheter and attached a common pewter syringe to the exposed end of the tube. In 1803 his nephew Doctor Dorsey, was in Paris and had made by Doctor Physick's order a tube of the kind now generally used, constituted of the same materials as the French catheter and resembling it except in size.

In the *London Medical Repository,* May 1822, Edward Jukes of Westminster described his stomach tube used for removal of opium and other poisons from the stomach and in the London *Medical and Physical Journal,* November 1822, and June 1823 he had further articles on his tube and its uses. It was made of elastic gum a fourth of an inch in diameter and two and a half feet in length, terminating at one extremity in a small globe of ivory with several perforations; the other extremity was adapted either by screw or by plug (the latter being preferable), to an elastic bottle of sufficient size to contain at least a quart of liquid and having a stop cock fitted to it in a similar manner to the flexible tube. It was recom-

mended in cases where the surgeon had neither a bottle nor a syringe. The tube alone might be able to answer the purpose, if the operator applied his mouth to the opening and instituted the office of siphon. This was recommended for use in lavage and gavage and from the description would seem to be somewhat similar to the duodenal tube in use today. The first experiments carried out by Mr. Jukes were on dogs, then on himself and others, assisted by Mr. James Scott, surgeon in Westminster.

Francis Bush of Frome had an article in the September 1822 issue of the London *Medical and Physical Journal* on the removal of opium and other poisons from the stomach by means of a flexible tube. The tube recommended by him was one to one and a half inches in circumference made of elastic flexible material with a point to enter the stomach described as being smooth and furnished with holes like the catheter; these holes to be four or six in number and as large as the tube would admit. By attention to this part of its construction even the more solid, as well as the fluid, contents of the stomach could be brought from it when the piston was made to act. With this tube he used a syringe; stating that it should not be permanently fixed to the tube but so constructed that they could be joined and separated instantaneously. He also recommended a stillette made of whalebone to facilitate passage of the tube into the stomach.

In 1823 Mr. Reed of Hosmonden Lane, Kent, made an improved stomach pump that was introduced with success in the wards of Guy's Hospital, London, through the good offices of Sir Astley Cooper (Garrison: Bos. Med. and Surg. Jour., February 1916). In a lecture by Sir Cooper in the use of Reed's instrument at Guy's he stated that they were indebted for it to Mr. Jukes who originally employed a common elastic bottle applied to the tube but the improvement of a syringe in its place was suggested by Bush of Frome. Thus the stomach tube became popularized in English practice.

In Germany A. Kussmaul was instrumental in introducing and popularizing the stomach tube. He made his first report on the tube and its practical use in medicine September 19, 1867 (Kussmaul: Tagebl. d. 41 Versamml. Deutsche Naturf. u. Aerzte) and in the official bulletin of the University of Freiburg, that was issued in celebration of the birthday of Grand Duke Friedrich, in 1869 published a monograph, "Ueber die Behandlung der Magenerweiterung durch eine neue methode mitteltst der Magenpumpe."

William Leube with his articles on lavage and gavage (Leube: *Deutsch. Arch. f. Klin. Med.*, 1876) also deserves credit for furthering this work.

The introduction of this valuable instrument to the practice of both veterinary and human medicine demonstrates how closely allied are both branches of the medical profession.

Acknowledgement is hereby made to Major Geo. W. Dunkin of the National Institute for Medical Research, Mill Hill, London, for his assistance in obtaining certain historical data contained in the foregoing, and to Dr. Fred Bullock, Secretary and Registrar of the Royal College of Veterinary Surgeons for his courtesy in suggesting certain references.

The quite casual reference to the use of the stomach tube in veterinary practice by British writers between the years 1817 and 1840 seem to indicate that its use at that period was common, even routine, since we find reference to it without any description of the tube or the technic of its use, just as is the case in veterinary literature today. It is one of the strangest things in the history of veterinary medicine that this most useful appliance once in common use, should have fallen wholly into disuse and have disappeared from veterinary literature for a period of more than 60 years, to be revived by American veterinarians in the first decade of the present century and again come into universal use and be regarded as indispensable by all good practitioners.

(*To be continued*)

The Practical Use of Artificial Impregnation*

By DOCTOR H. LOESSL.

UNDER the above title, Doctor Dschaparidse of Göttingen reports in the November 1933 issue of the journal Zuechtungskunde (Science of Breeding), on the latest experiments and methods in the practical use of wholesale artificial impregnation of different animals. Russia, on account of its long distances which make the transport of valuable breeding stock rather hazardous, offers an especially suitable field for the employment of artificial fertilization.

It is stated as a historical fact that, in the fourteenth century, an Arabian chieftain suceeded in procuring the sperm of a valuable stallion that happened to be in the possession of a hostile tribe. It is said that in this case the semen was gathered in a wad of cotton, and that this wad was inserted into the vagina of the mare, which was thus successfully impregnated. This more than primitive procedure was followed, toward the end of the eighteenth century, by scientific experiments, most notably by those of the Italian Spallanzani (1782) with a bitch. The Italian Rossi repeated the experiment. Only eighty years later, French gynecologists attempted the artificial fertilization of women as a treatment of sterility. Not until 1888 were the first of such experiments made with horses, in France, and not until 1893 were the first made in Russia. Since then, for the reasons above mentioned, Russia has bestowed the greatest attention on the problem of artificial fertilization. A great research institute was established in Moscow. The satisfactory results enumerated in the following were attained through the efforts of this institute.

It is reported that, in 1932, two million cows, three million sheep, 5,660,000 mares and 200,000 sows were successfully impregnated by artificial means.

The success in artificial fertilization depends on the precautions taken in collecting the sperm, and on observing painstaking care as to the sire's physical condition. The discharge should be collected in its entirety as, with almost all kinds of animals, it is a product of different glands. Special attention must also be paid to the conservation and the number of spermatozoa.

Principally, two methods have been employed for the gathering of the semen. The one most frequently applied consists of the use of a thin rubber tube (condum) whose open end is stretched on a metal ring, and which is inserted into the vagina of the female. Near the end of the tube, another ring which narrows and expands like the spring of a watch, giving a good imitation of the movement of the vagina, is pasted in. Before use, the rubber tube is washed in a 2% solution of soda and coated with sterile vaseline. The vaseline must not remain on the rubber longer than fifteen minutes; otherwise the rubber will suffer. The discharge of the sire is poured into a test tube which also has been coated with the same kind of vaseline.

With the second method an onanating device—an artificial vagina—made from hard rubber (ebonite), 20cm long and 45mm in diameter, is constructed. There are two openings at one end. One of them serves for the escape of air, and the other leads to a soft rubber tube. The passage for the penis through the soft rubber tube is narrowed, by filling the hard-rubber tube with water. When in use by the sire,

*Translated from *Zeitung des Vereins für Deutsche Schaeferhunde* by S. Boehm.

this creates the same sensation as the natural act of mating, assisted by the temperature of the water, which should be 40° to 45°C. The inner walls of the soft rubber tube are also lubricated with sterile vaseline. A glass tube, similarly treated with vaseline, is attached to the other end of the rubber tube, and in it the entire discharge of the male is collected. The whole apparatus is built into a phantom—a model of an animal of the respective genus. Experience has shown that it is unnecessary to create an artificial "heat odor." It is claimed that the desire of the sire is aroused by sight.

Both these methods have proved equally satisfactory for the gathering of the entire discharge and for the conservation of the spermatozoa. There is absolutely no ill effect on the health of the animal.

The semen volume of a ram is about 1cc and contains not less than 2.85 millions of spermatozoa. Bulls furnish at one service 5.5cc and 6.008 millions of spermatozoa. Twenty mares, thirty to forty cows and sixty sheep were usually impregnated with one discharge. It is considered possible to fertilize, during one year, two thousand cows from one bull, and two to three thousand sheep from one ram, without overtaxing the sires.

These methods have been used especially often in the breeding of the "Karakul" sheep in Russia. M. P. Kusnetzoff reported that, during one month, he had impregnated with his ram "Arabi" No. 306, ewes to the number of 2,733 of which 70% proved with lamb, and with his ram "Sur" No. 1136, during the same period, 1,403 ewes of which 71% proved with lamb. At that, these rams did not receive any of the forcing foodstuffs (high protein diet), on account of the scarcity of these feeds. The rams were not used daily, as the herds of ewes were not always available. The lack of ewes is considered the greatest obstacle to the full use of valuable rams.

The spermatozoa will keep alive two to three days. This is not sufficient for the long distances of Russia. Therefore, experiments were made to preserve the semen. Two methods have proved satisfactory. The one is based on shipping the sperm in the natural state. The other calls for a thirty to forty times' dilution. It is claimed that dilution has a favorable influence on fertilization. Two different solutions were used, with a pH of between 7.3 and 7.5, after solution. The material is shipped in a double-walled vessel, at a temperature of 10°C. Or, one may use porous earthen containers filled with water, in which the glass holding the sperm stands. The desired equal temperature is maintained by evaporation through the pores of such vessels.

The following solutions are used for the dilution of the semen:

	Ram, Buck	*Bull, Boar*	*Stallion*
Solution 1—Glykosophosphate in water.....	57.5 to 1000.0	54.0 to 1000.0	48.7 to 1000.0
Solution 2 — Monokalium Phosphate (KH_2PO_4)...	3.4	3.2	2.9
Binatrium Phosphate, ($Na_2HPO_4 2H_2O$) in water	17.8 to 1000.0	16.8 to 1000.0	15.2 to 1000.0

The glass vessels which contain the diluted sperm are coated with sterile vaseline before shipping, and the liquid is covered, air-tight, by the same vaseline.

After the semen has arrived at its destination the animals to be fertilized are led onto a suitable constructed scaffold. Then the vagina is washed. The impregnation is executed as follows:

1. A syringe is filled with the seminal discharge.

2. The walls of the vagina are careully examined with a mirror.

3. The tip of the syringe is introduced into the vagina.

4. A catheter is inserted into the cervix, 3cm deep with cows; 1cm deep with sheep.

Then the liquid is injected directly into the uterus, which process is to be watched with a mirror, to be sure of the success.

Much better results were reported after direct injection into the cervix than after injection into the vagina.

Walton gives the following data in reference to the duration of the life of spermatozoa: at 45°C they are killed immediately; the longest duration of life at 40°C is thirteen hours; at 37°C they live much longer. With a lowering of the temperature of the sperm-liquid, the dura-

tion of life lengthens till at 15°C it reaches a maximum of seven days.

The greatest cleanliness and sterilized instruments are of the utmost importance to the success of artificial fertilization.

The following instruments are required: a vagina-mirror, suitable for the species to be impregnated; a hard-rubber catheter, 16 to 20 inches long for cows, 8 to 10 inches long for sheep, both with a diameter of 0.75 to 1.0mm. The catheter serves for the direct injection of the liquid into the uterus and must be fitted to a glass syringe. Everything is to be washed in 65% alcohol before use. Metal syringes must not be employed, as contact with metal kills the spermatozoa. The syringe for cows holds 10cc, for sheep 2cc. Before use, the syringe is washed in a physiological salt solution and dried with sterile cotton. After use, the vagina-mirror is cleaned with 65% alcohol and sterilized over a Bunsen flame. In the manner mentioned, all instruments are washed before use and are kept in a drying oven at 150°C.

With two helpers, the impregnation of a sheep takes but one to two minutes. In 1931 over 845,000 sheep were artificially fertilized in Russia, from imported rams, with a result of 72% proving with lamb; of these 9% to 14.4% were twins. The average success in Russia with horses was 60%, with cows 84%, with sheep 72%. It is stated that the Russian wholesale enterprises encounter no difficulties whatsoever in the use of artificial fertilization. The Central Institute in Moscow furnishes the diluting solutions, ready for use. Thus, the spread of disease is avoided.

Artificial fertilization also produced good results with fur-bearing animals, whose transport is still more difficult and hazardous than that of domesticated animals, although the natural mating of some kinds of fur bearers meets great difficulties and in some species is impossible of execution under domestic conditions.

The creation of valuable hybrids also can so be attained.

At the Moscow Zoo, by means of artificial insemination, cross-breeding has already been attained between the Mongolian wild ass and the American thoroughbred, the Ukrainian cow and the bison, the Australian dinga and the domestic dog, and the wild Batens ox and the domestic cow.

Further, sterile female animals can be recognized beyond a doubt in this way and, in the interest of economy, conveniently removed from the breeding herd. The progeny of artificially fertilized animals produce normal progeny.

Protozoan Parasites of the Horse*

THE Protozoal diseases of horses include various intestine, blood, and tissue inhabiting parasites.

Amoeba Letullei

This indicates an affection of horses by the name of botrymycosis and frequently found in the literature about the horse.

Tumors are frequently found in the skin, seldom seen on the mucus membrane, though they commonly affect the spermatic cord following castration, extending into the abdominal cavity and reaching great size. These tumors are commonly found on the buttocks where they are exposed to injury, the brisket, withers, elbow, eyelid, stump of the spermatic cord. The lesions often locate in the lungs where they look like fibrous tubercles.

Coccidia

Eimeria falciformis.—A species of coccidia, Eimeria falciformis, is sometimes found in the kidney of the horse. The general habitat of this species of coccidia is in the epithelial cells of the intestine of the mice and was discovered by Eimer in 1870. This coccidium is often the cause of death in the horse.

Ciliates

Ciliates in general.—A great many ciliates are found in the horse but as yet no definite classification has been made of them.

Butschlia posticiliata.—A ciliate is found

*Abstract of a discussion presented at the Veterinary Short Course at the Michigan State College, Jan. 23-26, 1934.

in the large intestine of the horse but is quite rare.

Blood Inhabiting Protozoa

This includes trypanosome diseases consisting of blood and lymph inhabiting flagellate parasites of which there are four specimens.

Life cycles.—The flies become infected by trypanosomes by sucking up the blood from an infected animal. These organisms do not pass through an intracellular stage in the stomach but pass into the salivary glands, where they pass through the crighidial stage. Here they transform into infective trypanosomes ready to be transmitted to another host when the fly bites.

Transmission is by three methods:

Surra—biting flies (horse fly)—mechanical inoculation.

Mal de cadera—biting flies (horse fly)—mechanical inoculation.

Nagana—tsetse fly—horse fly through an essential intermediate host.

Dourine—coitis.

Dourine

Dourine is a contagious disease of solipeds transmitted by coitus. It is characterized by inflammation of the external genital organs, secondarily by paralysis and a peculiar skin eruption caused by lesions in the peripheral nerves and the intervertebral ganglia.

Dourine has largely disappeared from the United States due to modern hygiene. It entered the United States in 1882 from France due to the importation of an affected Percheron stallion.

The organism causing the disease is an animal parasite of microscopic size *Trypanosoma equiperdum.* This trypanosoma has the ability to penetrate the intact lining of the genital tract, from here it reaches the blood and is distributed over the body. Its toxic action is due to the production of poisons that act on the nerve endings and later the whole nervous system, leading to degeneration.

Experimental inoculation may be accomplished in horses, dogs, cats, sheep, white mice, rats and rabbits.

The period of incubation, by experimental inoculation, is from one to four weeks and may be much longer.

Two stages of the disease are recognized, (1) the primary stage which corresponds to local infection of the genitals, and (2) secondary general infection with localization in the skin, nervous symptoms.

Bacteriology Department, Michigan State College, M. J. COURT, East Lansing, Mich.

Damages Not Collectible for Acquiring Trichmosis From Eating Raw Pork

A resident of Iron Mountain, Mich., went to a local meat market and purchased from John Schinderle some pork butts, from which she made sausage, which was eaten raw.

The woman died of trichinosis and her surviving husband sued the butcher, Schinderle and Cudahy Brothers, packers of Milwaukee, Wis., for $25,000 on the grounds that the latter had: "Negligently failed to use due care in the preparation of the meat" and "alleged the breach of an implied warranty that the meat was reasonably fit and proper for use as food."

In the District Court, Schinderle was relieved from liability by a directed verdict. The jury, however, found against Cudahy Brothers and the case was appealed to the Supreme Court of Michigan, which reversed the verdict of the lower court without a new trial and assessed the costs against the defendant.

The following testimony of Dr. A. E. Behnke, formerly Inspector in Charge of the Bureau of Animal Industry office at Milwaukee, was quoted by the Supreme Court as a basis for its findings:

"The microscopic examination of hog carcasses for trichina with a microscope is not effective. That is, the fact that one may not find trichina in the muscles that are usually so infected is no guaranty that the rest of the carcass is free from trichina, and it is impracticable to make a complete microscopic inspection for

trichina of the entire carcass. . . .

"There is no way of detecting trichina or making an inspection so that a statement can be made that the entire carcass is free from trichina."

The court found that there was no testimony revealing negligence on the part of the packer, nor breach of an implied warranty, since pork is not commonly and usually eaten raw, and that the warranty should be applied only to the food used in the usual, rather than in the unusual and improper manner. In other words, one eats raw pork, if at all, at his own risk, which of course, was very well known before the Supreme Court heard the testimony.

The Supreme Court of the State of New York has rendered a similar decision recently. At that time there were said to be about 50 suits pending in New York in which damages were sought for injuries resulting from the consumption of raw pork. Don't eat it. Civilized man cooks his meat.

* * * *

Convulsions and Paralysis in Swine

In the Eastern parts of Moravia there occurs a swine disease[76] which is chararterized by a posterior paralysis and by tonic-clonic convulsions; it is commonly referred to as the "Teschen disease." In less severe cases of paralysis the hogs are able to crawl about, dragging their hind parts along. The tonic-clonic convulsions occur then most, when the hogs are either teased or subject to exertion. Nystagm is observed in severe cases. The sensorium is quite undisturbed, even in aggravated cases. The appetite is usually satisfactory in the lighter cases, though hand-feeding has to be resorted to. In the cases observed the temperature varied between 38.4 deg. and 39.8 deg. C.; in one hog a temperature of 40.1 deg. C. was recorded. The temperature sinks when death approaches. The gross pathological examination is usually negative, aside from congestion of organs and occasional edema. The histological examination reveals lymphocytary perivascular areas in the brain and spinal cord, having their seat in the gray substance, except in the cerebellum, in which the white substance is involved. The pia and dura mater are not affected. The histopathological lesions exhibit a certain similarity to those observed in poliomyelitis. With subcutaneous and submucous application of tissue emulsion from natural cases, the disease could be artificially transmitted to three out of 16 pigs used. The artificial disease was in all respects identical with the spontaneous disease.

Four stages of the disease can be recognized. (1) The incubation stage lasting from 14 to 28 days. (2) The prodromal stage, characterized by general symptoms, such as rise in temperature, weakness, loss of appetite. This stage should really be included in the incubation stage. (3) The irritation stage, characterized by the occurrence of tonic-clonic convulsions and general excitability of the animals. (4) The paralytic stage, characterized by complete paralysis of the extremities, and by the loss of the tendon-reflex.

Convulsion and paralysis are often observed simultaneously. Nystagmus is a regular symptom of severe cases.

The author concludes that encephalomyelitis enzootica suum (posterior paralysis of pigs, Teschen disease) is an infectious disease, transmissible to healthy pigs.

* * * *

A frequent observation in cases of aphosphorosis in cattle is the general lack of thrift and the poor condition of the animals affected. Lactating dairy cows in advanced stages of aphosphorosis are found to digest their feed as efficiently as the normal control. The lowered feed utilization by the phosphorus-deficient cattle is not from inefficient digestion of the feed.

[76]Klobouk, A. 1931-1933 and 1933-4. Encephalomeylitis enzootica suum. Zverolekarsky Obzor. 24(22):436; (24):460; 25(22):435. Zverolekarske Rozpravy 5(8):95; 7(8):85, (9):97, (10):109, (11):121. (Abstr. *Revue Veterinaire Slave* 1(3):87-90.)

Book Reviews

"Text-Book of Meat Inspection," by R. v. Ostertag, edited by T. D. Young; translation by C. F. Marshall. American edition. 744 pages. Alex. Eger, Chicago, Ill., 1934. $10.00.

The present work, superseding the eighth German edition of the "Handbook of Meat Inspection," is an outgrowth of the revision of this handbook and the coincident elimination of all non-essential text matter. Thus, the book under discussion, in its entirely new English translation, offers a more concise and precise thesaurus of meat inspection than the previous (1905) American edition of the handbook, based on the second German edition. Ostertag's book is not only of value to the members of the Bureau of Animal Industry force, and health officers in general, but equally so to every practitioner dealing with the diseases of food-producing animals. In fact, this textbook will prove to be the best substitute for the still unwritten American textbook on "Veterinary Pathology." Following is a list of the chapter headings:

Food Animals; Examination of Animals Before Slaughter; Abattoirs and Methods of Slaughter; Meat Inspection; Normal Appearance and Differentiation of Meat and Organs of Food Animals; Physiological Conditions of Importance in Meat Inspection; General Pathology of Slaughtered Animals Relating to Sanitary Service; The Most Important Regional Diseases; Blood Anomalies; Intoxications and Auto-Intoxications; Animal Parasites; Vegetable Parasites; The Use of Agglutinants in Sausages; Adulteration of Meat; Coloring and Inflation of Meat; Preservation of Meat; Poultry Diseases; Index; Appendices (twelve appendices dealing with the meat inspection laws of Great Britain, Australia, Canada, and the United States of North America).

Coccidia and Coccidiosis of Domesticated, Game, and Laboratory Animals, and of Man, by E. R. Becker. 147 pages. Collegiate Press, Inc., Ames, Iowa, 1934. $2.50.

Commensurate with the awakening interest of American veterinarians in protozoal diseases of the food-producing animals and the pet animals, the importance of veterinary protozoology for the curriculum of the North American veterinary colleges is beginning to be realized. Protozoal parasites are really more easily recognized and diagnosed than bacterial parasites, provided the veterinarian has the proper training in protozoology.

The present treatise, monograph No. 2, Division of Industrial Science, Iowa State College, forms an excellent introduction to the study of perhaps the most important group of protozoa and protozoal diseases of interest to the American veterinarian.

Twenty-two chapters are devoted to the parasites and the invasions as they occur in the cat, dog, chicken, duck, ferret, fox, goose, guinea-fowl, guinea-pig, horse, mule, ass, man, mouse, muskrat, ox, pheasant, pigeon, quail, rabbit, hare, rat, sheep, goat, passerine birds, swine, and turkey.

There are twenty-five plates and text figures which help materially in identification and description. The appendices contain a bibliography of nearly 350 references to the literature, a host catalog of genera of coccidia represented in vertebrates, and notes on technique. An author- and a subject-catalog conclude this exceedingly timely and valuable monograph.

* * * *

The sensitivity of *Brucella abortus* agglutination antigen for either the test tube or the rapid test method is increased for most agglutinating serums by the addition of either acacia or gelatin to the antigen.

Poultry Ailments. for Poultry-keepers, Veterinary, Agricultural, and Poultry Students, by W. P. Blount, F.R.C.V.S., with a foreword by Chas. Crowther, Principal of the Harper Adams Agricultural College, Newport, Salop. 306 pages; published by "Poultry World Limited," London, 1934. $1.50.

It is only natural that the wide-awake members of such an industry should demand information on how to lessen the appalling mortality of poultry, and, thus, contribute towards the preservation of the national wealth.

There are two ways of accomplishing this. The first is proper enlightenment of the farmer upon poultry hygiene and sanitation. This has been accomplished admirably in the first part of Blount's book. The chapter headings are as follows: Introduction; Rearing With Nature; Culling; Poultry Dietetics; The Digestive Tract; The Heart and Blood Circulation; The Respiratory System; The Ovary and Oviduct; The Sensory Organs; The Endocrine System of Birds; Post-Mortem Reports; Transmission of Disease From Poultry to Other Animals; Disinfection.

The second way, by which help to the farmer must come, is through the veterinary profession, the proper guardian of the health of live-stock. Professional veterinary instruction is attempted in the second part of the book under review. The chapter headings are as follows: Anemia; Coccidiosis; Contagious Catarrh; Fowl Pox; Fowl Typhoid; Malformations; Nephritis; Rickets; Roup; Worms. This part comprises 132 pages, as compared to 153 pages of part one.

The pathology and therapeutics section, while concise, is far from complete. Nevertheless it constitutes a reliable source of information to the veterinary student. Either part of the book gives evidence of the skill of the author as a teacher. The value of the book is enhanced by 30 half-tone illustrations.

The reviewer does not approve of the presentation of technical veterinary knowledge to the layman. In most of the veterinary colleges, the subject of pathology and therapeutics is introduced to the veterinary student (who, as a rule, has a broader scholastic background than the average farmer) after about two years' intensive study of the basic natural and biologic sciences. It is clear, that to inflict a very complicated subject, such as the interpretation of morbid anatomical changes, upon a superficially prepared mind, such as the majority of farmers, and especially the beginners in poultry farming, must needs possess, is apt to bring havoc to the individual poultry raiser as well as to the entire industry, instead of benefit. In other words, this is just another of many unsuccessful attempts to write a work on diseases for both lay and professional readers.

The book is concluded with a chapter on research work, a glossary of veterinary terms, a subject index, and an index to advertisers.

* * * *

The Old Practitioner and The Young Practitioner

I READ with interest the article of Dr. E. T. Baker in the February issue of VETERINARY MEDICINE. During the course of his article he took a few raps at the recent graduate, and also at the colleges from which they graduated. Being a recent graduate from the Kansas State College and believing those graduating have the average intelligence of those graduating years ago, I feel inclined to offer a little defense of the young practitioner and of the modern veterinary college.

Many of the older practitioners seem to have the idea that we young veterinarians are a bunch of mollycoddles who can't hold our own with themselves. Dr. Baker quoted a man who had been practicing for forty years as follows: "Nowadays, with all the state schools offering courses, the boy seems to think the country owes him a soft living after he receives this free education. He is full of fraternity and other high faluting ideas, and lacks the first principles of inter-

est toward his future client or patient. Of course, we can't put old heads on young shoulders, but it's getting so I don't want any of these boys around; they insult more clients than they make friends. There seems to be something wrong with our university training; we had better get back to some of the fundamentals."

I should like to ask the veterinarian quoted with how many recent graduates he has come in contact, from whom he drew his conclusions. Unless he lives in a college town, I venture it has been fewer than five, and quite probably only one.

I believe the boy who has survived in college during our recent economic distress has no illusions about the country owing him a soft living. He has had to scrimp and save, wash dishes, clean floors, cut grass, shovel snow and cook his own meals to obtain his "free instruction." Having recently graduated with a class of nearly forty, I can say with authority that these boys look forward to hard pedaling to earn a decent living.

I should like to know what the older veterinarians consider are the fundamentals of a veterinary education. Never in the history of veterinary education have there been stiffer requirements for a degree in that branch of medicine. Never has the veterinary student graduating been better prepared to cope with the problems with which he is confronted than today. He has learned the latest scientific essentials of physiology, pathology, diagnosis, surgery and medicine. In his clinical experience he has had the advantage of taking care of and treating many animals, and under the guidance of skilled operators he has performed numerous operations on experimental animals.

Doctor Baker questions that veterinary students are taught the practical methods of making a living. I believe that the modern graduate is taught more of salesmanship, business psychology and business management than were his predecessors. Although these items are not listed in the curriculum, the veterinary faculties realize the need of those subjects in a veterinary education and put a great deal of stress on them. The statement that the young graduate doesn't know enough to explain something to a client without insulting the client's intelligence is ridiculous. A man, making such a statement is not acquainted with sufficient facts on which to base his judgment.

I dislike criticism of the older veterinarian. We are all acquainted with the type who goes around dressed in the most unprofessional attire, dirty shirt, wrinkled collar, unpressed trousers and manured shoes; his office comparing with his personal appearance, but such men are not representative of older practitioners nor are one or possibly two young graduates that Doctor Baker's friend may have known who insulted clients any more representative of young graduates. I am sorry to say that although some of the younger men are also guilty of offenses against good taste, in general they are getting away from that characteristic "horse doctor" appearance and in doing so are raising the respect of the public for the veterinary profession. Anyhow, who is responsible for the legendary horse doctor? Certainly not the recent graduate for the old notion antedates even his birth.

To a new graduate who has had ideals of professional ethics and conduct taught him until it is almost a religion, it is a shock after graduation to run into veterinarians who have been practicing for years and have no more regard for ethics than the man who runs the corner grocery. I know of a young man who has recently started practice in a city where there are five small animal practitioners. One of them has made deep cuts in standard prices. The man who did that is not a young man, but is the oldest practitioner in the city, a man of national distinction as a veterinarian. When such men as he resort to such tactics, what encouragement is offered the novice?

Notwithstanding the above criticisms, I have the greatest respect for the older veterinarians to whom we are indebted for most of our present day knowledge, and I hope that in the years to come there will be a better understanding and goodwill among all of the members of the veterinary profession.

Kansas City, Mo. Deets Pickett.

On September 1, 1934, Illinois became the fifteenth state to attain freedom from bovine tuberculosis and to receive Federal recognition for that achievement. It marked the culmination of an aggressive tuberculosis-eradication campaign in which more than a million tuberculin tests have been applied annually in recent years in that state.

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A Chicago man recently wrote a letter of inquiry concerning a colt advertised in the state where the tall corn grows, and received the following somewhat delirious reply:

This horse is a beautiful thing in harness as well as under the saddle, and I know he will suit anyone who is acquainted with values in horse flesh. He is certainly a comer, age three; only a baby, yet will do all I say he will and then some. Chief breeding, sound and gentle, perfect manners everywhere. About the sweetest thing in harness you ever saw. Sets head, tail up, goes with the power of a Cadillac car, very high action all around, and the more he goes the higher he puts them. Lovable disposition; walk of a chorus girl; you never saw anything more handsome and people stop to watch his stride. He is a veritable peacock, and will win combination class ribbons this fall. If you want speed, action and type in a real colt with great prospects, this is your chance to get it.

I am pricing this colt at $265; the first check gets him. This is the kind of a colt that interests any showman; the pride of any man on any bridle path. He has made his first *debut* right in my own stable and no matter where shown always draws admiring remarks.

Mr. M—— was here yesterday to see this colt and went into ecstasies over him, but he is a dealer in five gaited horses only and not interested except to commend him. The colt is thoroughly broke in traffic; has been in training only this winter, and can use a lot more training to put him into the top classes, but I figure he will get that training between now and fair time, very easily. My 13-year-old daughter rides him and so does my wife, and whenever I want a real ride with a little class I ride him and make them stay at home.

I am not trying to fool you on this colt, and if I didn't need the money right now never would let him go. Now this is a red hot offer, and as I say, the only reason I make it is because I must raise some money, and since there are no more banks out here to rob, I will have to give way to my better senses and put a price on this colt that will turn him. Any time you want your money out of him have somebody take him onto the park bridle paths or even put him in your Chicago sales rings. You will easily make $100 to $200, and I am firm in my belief that he will be twice that price by fall when he is shown in the ring.

ARMY VETERINARY SERVICE

Major Harry J. Juzek is relieved from duty at Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa, effective at such time as will enable him to proceed to New York, N. Y., and sail on or about September 22, 1934, via Government transportation, for the Hawaiian Department. Upon arrival at Honolulu, Major Juzek will report to the commanding general for assignment to duty with the Veterinary Corps. The name of Major Juzek is removed from the detached officers' list, effective upon relief from his present duties.

Orders relieving Captain Herbert M. Cox from duty at Plattsburg Barracks, N. Y., and assigning him to the Panama Canal Department for duty, are revoked.

Orders assigning Major James L. Barringer to duty at Plattsburg Barracks, N. Y., upon completion of his present tour of foreign service, are amended so as to assign Major Barringer to duty at Ft. Ethan Allen, Vermont, instead.

Major Arthur D. Martin is relieved from duty at Fort Ethan Allen, Vt., at such time as will enable him to proceed to New York, N. Y., and sail on transport scheduled to leave that port on or about October 4, 1934, for the Panama Canal Department.

Lt. Colonel Alfred L. Mason is assigned to the Army Medical Center, Washington, D. C., effective upon completion of his present tour of foreign service, and, in accordance with orders to be issued by the commanding general Panama Canal Department, will join that station and report to the commanding general for duty for the purpose of pursuing a course of instruction at the Army Veterinary School.

Major Wm. R. Wolfe is relieved from further assignment and duty at Ft. Francis E. Warren, Wyo.; will proceed to Fort Logan, Colo., and report to the commanding officer for duty, and in addition will act as acting veterinarian, Fitzsimons General Hospital, Denver, Colo.

The appointment and assignment of the following-named second lieutenants, Veterinary Corps Reserve, as second lieutenants in the Veterinary Corps, Regular Army, with rank from July 1, 1934, is announced:

William Edwin Jennings, Fort Leavenworth, Kans.

Curtis William Betzold, quartermaster depot, Chicago, Ill.

Major Nathan M. Neate is assigned to duty at the San Francisco port of embarkation, Fort Mason, Calif., effective upon completion of his present tour of foreign service in the Hawaiian Department.

Colonel Walter Fraser, Presidio of San Francisco, Calif., has been directed to proceed to his home and await retirement.

The promotion of 2d Lieut. Geo. T. Price to the grade of 1st lieutenant to rank from July 16, 1934, is announced.

Major Clifford E. Pickering is relieved from further assignment and duty at March Field, Calif., and will proceed to Fort MacArthur, Calif., for duty.

Orders assigning 1st Lieut. John L. Owens to duty at Ft. Riley, Kans., are revoked. Lt. Owens is assigned to duty as a student at the

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Quartermaster Corps Subsistence School, Chicago, Ill., effective upon completion of his present tour of foreign service in the Panama Canal Department.

Major Everett C. Conant is relieved from further assignment and duty at the purchasing and breeding headquarters, Lexington, Ky., and from additional duty at the University of Kentucky, effective upon completion of his present leave of absence, will then proceed to Fort Reno, Okla., and report to the commanding officer Reno quartermaster depot for duty.

2d. Lt. Curtis W. Betzold is relieved from further assignment and duty at the quartermaster depot, Chicago, Ill., effective on or about September 5, 1934, will then proceed to Carlisle Barracks, Pa., and report to the commanding general for duty.

Lt. Col. Raymond A. Kelser now on duty at Boston, Mass., is detailed as a student under the provisions of section 127a, National Defense Act, as amended in addition to his other duties, for the purpose of pursuing a course of instruction in bacteriology and immunology at Harvard University, Boston, Mass., and will report to the registrar for duty accordingly.

Major Floyd C. Sager now on duty at Lexington, Ky., is detailed as a student under the provisions of section 127a, National Defense Act, as amended, in addition to his other duties, for the purpose of pursuing a course of instruction in animal diseases at the University of Kentucky, Lexington, Ky., and will report to the registrar for duty accordingly.

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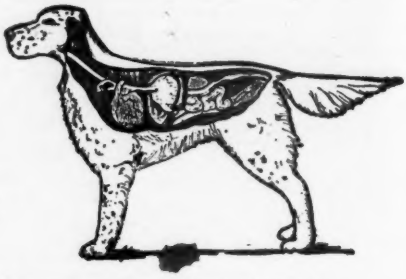

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Veterinary Corps is relieved from his present assignment and duty at the station indicated after his name, effective at such time as will enable him to comply with this order, will proceed to San Francisco, Calif., and sail on the transport scheduled to leave that port on or about November 7, 1934, for the Philippine Department:

Lt. Col. Wm. H. Houston, Ft. Sam Houston, Tex.

Major Earl F. Long, Ft. Bliss, Tex.

Major Irby R. Pollard, Fort Meade, S. Dak.

Each of the following-named officers of the Veterinary Corps is assigned to duty at the station indicated after his name, effective upon completion of his present tour of foreign service in the Philippine Department:

Major John K. McConeghy, Ft. Bliss, Tex.

Major Howard M. Savage, Ft. Sam Houston, Tex.

Lt. Colonel Geo. H. Koon is assigned to station at Ft. Sam Houston, Tex., and in accordance with orders to be issued by the commanding general Philippine Department, will join that station and report for duty, and in addition to his other duties will report to the commanding general Eighth Corps Area for duty at his headquarters.

Major Robert P. McComb having been found by an Army retiring board incapacitated for active service on account of disability incident thereto, and such finding having been approved by the President, the retirement of Major McComb from active service on August 31, 1934, under the provisions of section 1251, Revised

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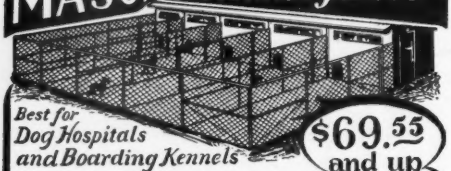

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